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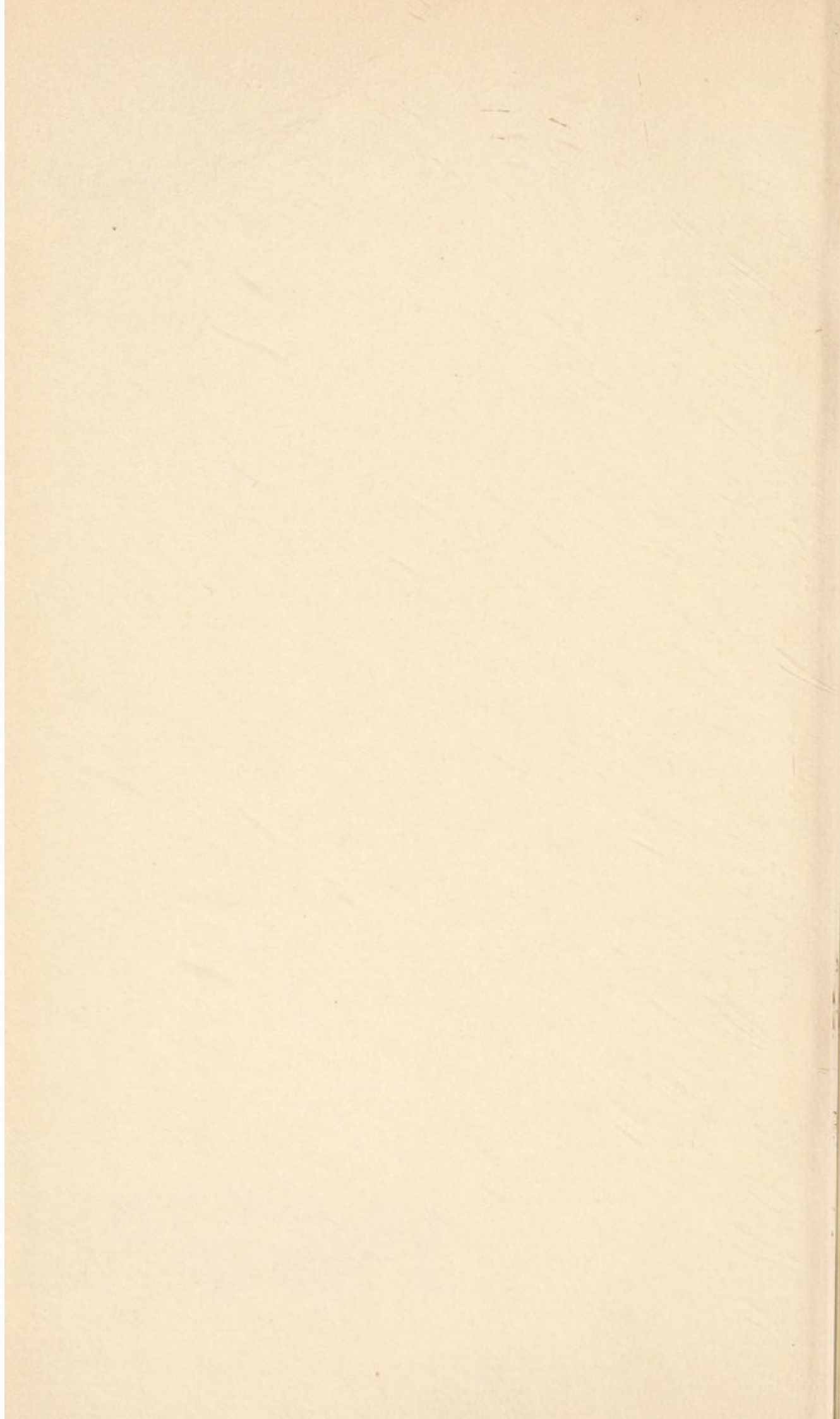
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OR
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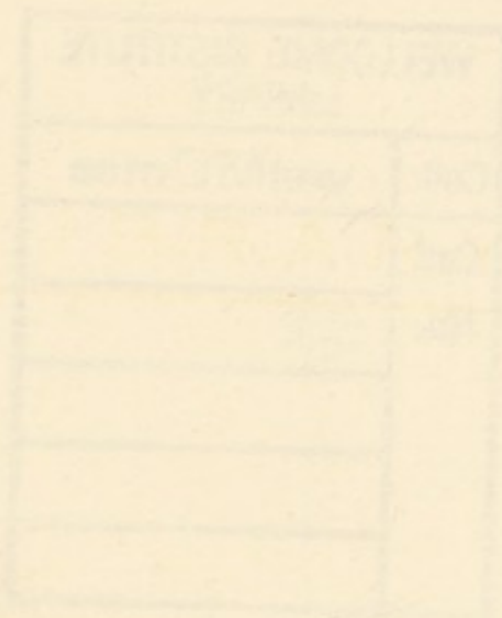
THE BELLY BOOK

OR DINER'S GUIDE

BY

C. LOUIS LEIPOLDT

F.R.C.S.ENG., D.LITT.



LONDON

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TO
MY FRIEND AND COLLEAGUE
VALENTINE ST JOHN
NOW OF LOS ANGELES

PREFACE

THIS book is a new edition, under a new name, of one written more than twenty-five years ago at the suggestion of the late Mr L. Cazenove to explain, in simple language, what we then knew about dietetics, or at least so much of it as would interest the lay public.

So much has been added to our knowledge since then, and so much has been written on the subject of food and feeding, that the publishers have asked me to revise the book with a view to re-publication.

I do so with pleasure, for my interest in the subject with which it deals has not waned with the years, but rather grown from the experience of cooking and dining garnered in many lands and under widely varying conditions since I wrote the original *Common-sense Dietetics*. I am grateful to those who have found the book, in its old guise, useful and instructive, and for the constructive criticism with which they have on occasion favoured me, and I take this opportunity to express my cordial acknowledgment of the appreciation it has received in many quarters.

On re-reading it, I find that while the earlier chapters stand in need of revision, on account, chiefly,

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of the knowledge we have gained during the past twenty-five years of the importance of what are known as accessory food factors, the vitamins, ferments, and catechins, the latter ones, dealing more especially with what Walker rightly called "the art of dining," demand comparatively little modification. The greater part of new matter that has been incorporated into this edition will therefore be found in the first three chapters.

The art of medicine, of which dietetics is but a branch, though perhaps a much more important branch than medical men are willing to concede, has made great forward strides in this century. In no direction has its progress been more practically useful than in biochemistry, which concerns itself entirely with what goes on in the human body, and attempts to account for that mysterious adjustment of our internal to our external relations that is one of the characteristics of life. We have discovered data that enable us at least to offer some explanation of facts that two generations ago we were wholly unable to account for. The discovery of vitamins, those curious substances that, although not themselves foods, are yet indispensable adjuncts to a perfect diet, and the almost equally important knowledge of the part played in vital processes such as assimilation and digestion by certain body-secretions, whose nature and action are as yet imperfectly understood, have considerably changed our conceptions about nutrition and metabolism, or the manner in which

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we repair tissue waste by taking in tissue-building material. All this new knowledge has shed light upon much that was previously dark and obscure. But the illumination is not yet complete. There is still much mystery, which cannot be cleared up by dogmatic assertion and authoritative statement, but must be patiently removed by methods of trial and error, the only methods by means of which science can arrive at any certain conclusions. Dietetics, for all that has been written, still remains an empirical art, and must necessarily so remain until we can find a reasonable explanation of what puzzles us to-day, until, in fact, we can confidently answer the question, "Why should one man's food be another fellow's poison?"

At the beginning of the present century few of us realised the importance of a thorough study of dietetics as a factor in communal and national affairs. Its importance for the individual had long been recognised, and it is to the credit of all great cooks that they have always insisted upon it. The Great War, with its dislocation of food supplies and its clamant call for food-substitutes and economy of food materials, brought us suddenly face to face with problems that were by no means new, but that had been neglected in peace time. It led to an almost immediate and feverish activity, in which experimental science took its part, to study these problems, and from that concentrated research much of what we now know has emerged, to be amplified and

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enlarged more leisurely, and therefore perhaps more securely, by subsequent research work. Jackson, in his text-book, *Inanition and Malnutrition*, was able, shortly after the war, to collect several thousand articles on the subject, and since then the literature has grown amazingly, so much so, indeed, that it is at times difficult to see the wood for the trees. We are now concerned not only with the diet of individuals or classes, but also with the effects of particular diets upon races and upon humanity as a whole. The knowledge that we possess of dietetics in warm climates and its effects under tropical conditions has recently been summarised by J. Neil Leitch in his *Dietetics in Warm Climates*, that is likely to remain the standard text-book on the subject for some time to come. The importance of dietetics to the human race as a whole has more recently been discussed by J. R. de L. Marett in his interesting *Race, Sex and Environment : A study of mineral deficiency in human evolution*, in which it is attempted to show that lack of essential mineral values in food-stuffs has profoundly modified humanity from prehistoric ages to the present time. The research work of Loewy, Lusk, du Bois, Henderson, McCarrison, Goldberger, and many others, has brought important facts to light that have made it clear how difficult and how important are the problems with which dietetics are concerned. The League of Nations, even, has interested itself in dietetics, as witness the recent report of its Commission on Nutrition. This report assumes a

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2400-calorie requirement in non-tropical climates for the average citizen, but emphasises the contention (by no means proved) that modern diets fail to give us adequate "protective foods"—that is to say, food-stuffs rich in calcium, phosphorus, and vitamins—while we consume too much proteins and sugars. The advice and assistance of expert cooks would no doubt improve such reports that are compiled largely on laboratory findings, and appear to make little allowance for the changes foods undergo in cooking and preparation.

With these large and expansive problems, however, the ordinary diner has little to do, and this book makes no attempt to deal with them. Yet, in passing, it may be pointed out that national or racial dietetics do influence the individual, both directly and indirectly. For example, the present-day increased consumption of tinned and preserved foods, and the consequent decrease in the eating of fresh food-stuffs, together with the increase in the consumption of salt and condiments, cannot but react upon the individual diner. They create a demand for preserved and pre-prepared food that must inevitably militate against good culinary taste, and may in time adversely affect our standard of good cooking. By habit and custom a community may learn to commit dietetic errors, and such habits may easily become conventionalised, with the result that the individual may find it as difficult to resist conforming to them as a South Sea islander to ignore a tribal taboo. The excessive

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use of salt at table is such a conventionalised habit, and although it has been deprecated and deplored, it continues, and is more firmly fixed among Western nations than it was ever before. While the ordinary diner is thus not expected to be profoundly and actively interested in dietetics as a national problem—certainly not to the extent of bothering about the iodine content of his food or the probable effect that a deficiency of magnesium in his breakfast will have upon his offspring—one can expect him to take some interest in it so far as racial or national habits of eating and drinking will react upon himself.

That interest should be a knowledgeable interest. He should know something about the principles of dietetics; what food consists of; what are food values; what purpose is served by accessory food factors; how food should be chosen, how prepared, and last, but not least, how it should be eaten in order to serve its chief purpose, the satisfaction of his appetite and the repair of his tissue waste. The first part of such knowledge, as it is purely physiological, necessarily needs some explanation and comment, but it does not need a thorough understanding of intricate physiological questions. In this book that information has been compressed into a chapter that contains the essentials, and if the reader wishes to have further data he may find them in well-known text-books, such as McLester's *Nutrition and Diet* or Lusk's *Science of Nutrition*. The

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second part, how food should be selected, cooked, and served, trenches on the domain of the cook more than on that of the physiologist, and in this book it has been dealt with in a slightly less epitomised manner. The history of cooks and cooking, the manner of serving and preparing food for the table, and the way in which it should be eaten—in brief, the art of dining—are matters to which the consumer may well give some attention and time, and they have therefore been considered at some length.

In such discussions personal taste and predilection cannot be prevented from creeping in, and I make no apology for their presence in these chapters. The more one dines, the more experience one gets of how food is bettered or made worse by modern methods of preparation. It is inevitable that in the course of the past twenty-five years my personal opinions on some aspects of cooking have become modified through such experience, and that here and there the opinions expressed in the first edition of this book have been deleted from this edition. But such deletions have been very few, and on the whole there has been no necessity to confess a change of faith. That faith is in agreement with what most exponents of the art of dining have taught through the centuries. It is based, very firmly, on moderation, simplicity, and the avoidance of anything, both in preparing and in serving food, that can interfere with the comfort and health of the consumer. These principles find ample justification in all that modern science can

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tell us of dietetics, and they have, moreover, the authority of all great cooks and diners to back them.

My grateful acknowledgments are due to Mr A. L. Bacharach for his help in revising the chapters relating to vitamins and food in Health and Disease.

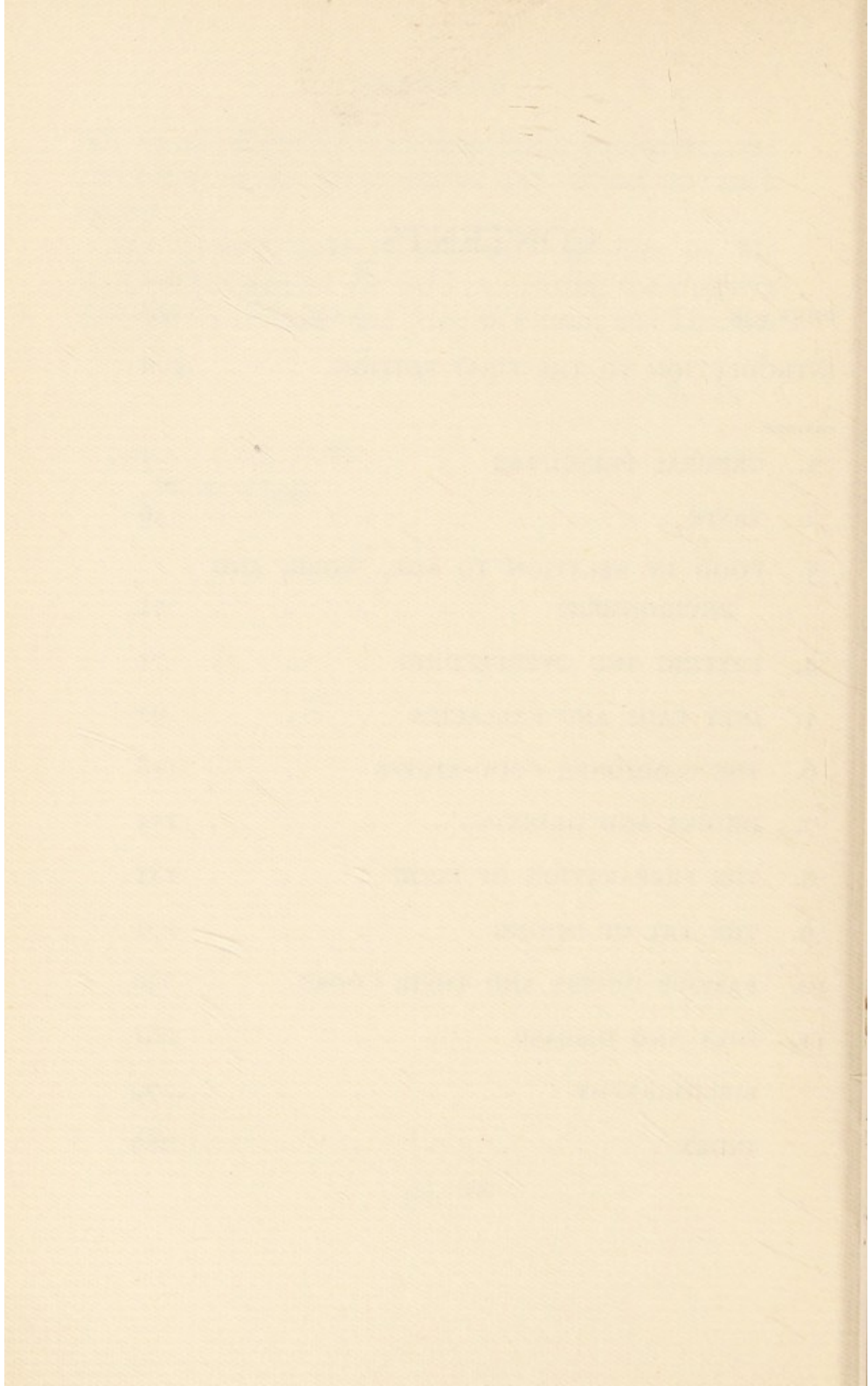
C. L. L.

ARBURY, CAPE TOWN.

February, 1936.

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INTRODUCTION TO THE FIRST EDITION

“ Le sujet matériel de la gastronomie est tout ce qui peut être mangé ; son but direct le conservation des individus, et ses moyens d'exécution la culture qui produit, le commerce qui échange, l'industrie qui prépare, et l'expérience qui invente les moyens de tout disposer pour le meilleur usage.”—BRILLAT-SAVARIN, *Méditat.*, iii.

“ SOME people,” remarked Dr Johnson to his friend and biographer, “ some people have a foolish way of not minding, or pretending not to mind, what they eat. For my part, I mind my belly very studiously, and I look upon it that he who does not mind his belly will hardly mind anything else ! ”

Expressed with the doctor's characteristic disregard for conventionality, this opinion, when carefully considered, is an excellent example of the sound common-sense which pervades all his dicta. It is at once a rebuke to those who think that such a subject as food is too coarse and mundane a matter to occupy seriously the attention of a thoughtful man, and an encouragement to those who deem the question of feeding one of the greatest and most important that can occupy the mind of man. “ Anybody,” said Walker, “ can dine, but few know how to dine so as to ensure the greatest quantity of health and enjoy-

ment." As a corollary to Dr Johnson's dictum, just cited, this verdict is to be commended to both classes of mankind. The careless, indifferent diner, who wastes no time, attention, or study on what he eats or how he eats, will find that he loses half of the pleasures that life can give him. On the other hand, he who dines well, minding his belly sedulously, studiously, and carefully, will discover that he adds greatly to his health and comfort by attempting to gain some acquaintance with the simple rules of dietetics.

No apology, surely, is needed for the writing of a book on the subject of food and feeding. There are many manuals, excellent enough, to which the public has access, but most of them have their limitations through being either too technical or too simple to give, in detail, what the average diner wants to know about the food that he consumes. Modern science has carefully investigated the economics of food, its chemistry, its metabolism, or the changes that it undergoes before it is assimilated by the organism. A host of papers have been written on the subject, and the mine is still unexhausted, while there are problems which physiologists have not yet settled even to their own satisfaction. In this chaos of widely diversified opinion, the average man, who is neither a faddist nor a systematist, who merely wishes to know essentials so that he may draw his own conclusions from them, is at a disadvantage. Many of the terms used are unfamiliar to him ; much

of the literature is a Chinese puzzle which he cannot solve. During the last half-century there have arisen so many sects in dietetics, so many clamouring apostles of lives simple and lives elaborate, each supporting itself on the grave pronouncements of some weighty authority, that it is pardonable if the average diner feels some difficulty in deciding which of these to follow. For this reason alone a simple book on dietetics seems desirable.

But there is an added reason. The conditions of modern civilisation are changing our habits of life much more rapidly than we imagine. We live at a greater rate now than we used to do fifty years ago ; the probabilities are that we will live at an even greater rate fifty years hence. The dietetic standards that were canonical a decade ago are no longer so in all their fulness ; they need amplification here, pruning there, and only he who understands the subject and who is able, so far as anyone can be able, to give a reason for his plan, can satisfactorily amend his rule of life to adapt himself to this change.

A knowledge of the rudiments of the science and art of feeding—in other words, of the principles of dietetics—is of the greatest service to anyone who wishes to preserve his health, and to couple with such preservation the enjoyment which comes from a sane and liberal use of the senses with which nature has endowed him. To quote Walker once more, the most temperate and the most common-sense impregnated writer on the art of dining : “ As our senses

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were made for our enjoyment, and as the vast variety of good things in the world were designed for the same end, it seems impiety not to put them to their best uses, provided it does not cause us to neglect higher considerations." And no one can put them to the highest uses unless he is in a position to know what are the effects of certain kinds of indulgence, of fasting, overfeeding, improper feeding, and the like. It is with these matters that the science of dietetics deals, and, shorn of its technicalities and reduced to plain, everyday language, that science is as easily comprehensible to the average man as are the equally simple elements of hygiene, of which, after all, dietetics is merely a branch.

LONDON, 1911.

CHAPTER I

GENERAL PRINCIPLES

“ La destinée des nations dépend de la manière dont elles se nourrissent.”

BRILLAT-SAVARIN.

DEFINITIONS are admittedly difficult. That is perhaps the reason why no one has yet succeeded in giving a perfectly satisfactory definition of the word “ Food.” At first sight it may seem easy enough to define what we mean when we speak of a food. It is obviously that which is eaten for the satisfaction of the appetite and the wants of the body. But a little reflection will readily convince anybody that the explanation is not so simple as it appears to be. That being the case, we are forced to widen our definition, just as we have to do when we want to describe what we understand by the word “ poison.”

By “ food ” we imply something, a substance, a drink, perhaps even some chemical combination pumped into our veins, that can supply the body with material for growth and repair of tissue waste, that can give to the body-organs the wherewithal to manufacture energy that may ultimately be translated into heat, work, action, thought, life. That is what the dietician understands by a food, and his shortest definitions have been anticipated by the exceedingly useful one coined by Brillat-Savarin, who maintained that “ Food is a substance capable

of undergoing animal assimilation." This definition, although it is not, strictly speaking, scientifically accurate, serves every practical purpose.

When we eat something that is not capable of being converted into a form suitable for easy absorption and assimilation by the tissues, we obviously do not supply the body with raw material for the repair of waste nor for the production of potential energy. Such an article of diet, therefore, cannot be a food. On the other hand, we may consume a substance that gives us plenty of potential energy, but does not repair tissue waste, or one that repairs tissue waste and gives no energy, though the latter is much less common. Such things are not foods in the true sense of the word; they are adjuncts to food, stimulants or diluents as the case may be, but they cannot be called real foods. Brillat-Savarin's definition, in some cases at least, breaks down, for there are articles of diet that, although they are capable of being assimilated, do not help to build up the body, but merely supply fuel and energy to the tissues. In general, however, a food-stuff that is assimilated is capable of fulfilling both the conditions already laid down, and to a certain extent, therefore, the definition may stand. It is a useful, common-sense one, easy to remember and understand.

Many other definitions have been given. One is "a palatable mixture of food-stuffs"—a definition that begs the question and that will be dismissed by the scientists with a shrug, although it may find

favour with the cook. Lusk has defined food as "material capable of being added to the body substance or of preventing or reducing a waste of necessary constituent of the organism." But no definition has yet been given that will satisfy all the requirements of those who wish to know exactly what a food is. Nor is such a definition likely to be given before we know much more about food than we do at present.

The tissues of the body are composed of materials that any food must contain in suitable quantities if it is to be a good food. These materials are, briefly :

Proteins : Substances that contain the element nitrogen.

Carbohydrates : Substances containing carbon, oxygen, and hydrogen, but no nitrogen.

Fats, that also contain no nitrogen.

Mineral salts, chiefly of sodium, calcium, and magnesium, although many other mineral elements are necessary to life and are found in the tissues.

Water.

In addition we now know that a perfect food must not be lacking in those essential substances that are called "vitamins." The *rôle* of these "accessory food factors" will be discussed later.

THE PROTEINS.—Proteins are the most important compounds found in living matter, and they are absolutely necessary, for without them no life can exist. They are highly complex combinations of carbon, hydrogen, oxygen, nitrogen, and sulphur ; they are, generally speaking, insoluble in alcohol,

capable of being coagulated or rendered insoluble in water by the action of heat or mineral acids, and of being precipitated by certain chemicals. With the exception of the diffusible forms, of which peptone is the chief, they belong to the class of colloids that are materials that cannot easily penetrate through animal membranes, and they are therefore said to be indiffusible. They are divided into several groups or classes, arranged according to their solubility in water. In the first class are the albumins, such as white of egg, the protein found in blood serum and in milk, and that met with in certain plants. Next come the globulins, that, like the albumins, are coagulable by heat. Among them are the proteins found in muscle (myosinogen), in blood serum (serum globulin), in cereals (vegetable globulin), and in the crystalline lens of the eye. In the third class are the proteoses, soluble proteins derived from the two former classes by digestion. In the fourth group are the peptones, soluble and diffusible proteins, the end products of digestion of the three groups. In the fifth class are the so-called coagulated proteins, which are soluble proteins that have been changed by heat or fermentation into an insoluble body that can, however, be again made soluble by digestive action or by chemical processes.

There is yet a sixth class in which the simple forms are combined with organic material to form highly complex bodies, such as the proteins of blood pigment; the gluco-proteins, in which protein is com-

bined with a carbohydrate, the nucleo-proteins, in which it is joined with nucleic acid. These are called conjugate proteins. There is further a small class of very peculiar substances, known as protamines, and another equally perplexing group called albuminoids. All these groups, usually in intricate alliance, are to be found in our common food-stuffs.

THE CARBOHYDRATES.—These are found chiefly in vegetable foods, although they occur in animal tissues. They are compounds of carbon with water, or, rather, with the elements of water, oxygen, and hydrogen. They form the large group of sugars and starches, and are among the principal food-stuffs in daily use. Most of them are freely soluble in water and readily diffusible through animal membranes.

FATS are found in both animal and vegetable tissues, though they occur chiefly in the former. In vegetables they occur mainly as oils. They are compounds of fatty acids with glycerin, which is what chemists call a trihydric alcohol. Fats are the great source of potential energy for the production of heat.

Water occurs in practically all food-stuffs, and is indispensable to the organism, since a large proportion of all body tissue consists of it.

Inorganic or mineral salts are required by the body for building both bone and muscle, and also for repairing the wastage of nervous tissue. We obtain them, in quite sufficient quantities, in our ordinary food-stuffs, although habit has made us prone to use more sodium, in the form of table salt, than we really

need. Iron we get from meat, vegetables, and from some food beverages; calcium we get from meat and cereals chiefly; phosphorus we get from meat and vegetables; potash, magnesium, and other mineral salts, of which we need comparatively little, we get abundantly from vegetables and fruit.

For centuries it has been realised, though often only dimly, that the "proximate principles" of food—protein, fat, carbohydrate, minerals and water—were not sufficient for growth, health and reproduction. The absence of fresh meat and vegetables from the diets of men on sailing ships had been found to lead to scurvy and beri-beri. As the result of the work of many investigators, notably Funk, Hopkins, McCollum, Eijkman and others, we now know that every complete diet must contain certain "accessory food factors" to prevent the occurrence, in acute, chronic, or sub-acute form, of "deficiency diseases."

These accessory food factors are known as vitamins. Our knowledge of their nature and function has rapidly increased in the last two decades. As this advance has occurred it has somewhat upset the alphabetical classification in the order of discovery. Vitamin A, essential for growth and the healthy condition of mucous membranes, one of the main barriers to bacterial invasion, is an alcohol closely related to the vegetable pigment carotene, a hydrocarbon, $C_{40}H_{56}$, which is converted in the animal body to vitamin A; this is stored in the liver. Liver

fats and oils are rich sources of the vitamin, which is also present in the yolk of eggs and to a less extent in butter and milk-fat, especially that of summer-milk.

Vitamin B is now known to be a "complex" of several factors, at least four and probably six or seven. Vitamin B₁ is essential for the maintenance of healthy nerve-endings and appears to be closely connected with the proper use of food carbohydrates. In its absence beri-beri develops. The composition of vitamin B₁ has now been fully worked out and its synthesis has just been achieved. It appears to be a nitrogenous compound—justifying Funk's original term of "*vit-amine*"—and is the only vitamin known to contain sulphur in the molecule.

The other vitamins of the B "complex" are less well characterised, but one, called lacto-flavin, a water-soluble highly fluorescent dye-stuff occurring in milk, liver, malt extract, kidney and other natural sources, has been fully synthesised from inactive substances. Of vitamins B₂, B₃, B₄, B₅ and B₆, our chemical knowledge is still far from complete.

The chief natural sources of the vitamins in this group are the germs or embryos of cereals (wheat-germ, rice-polishings), yeast and liver.

Vitamin C, the anti-scorbutic vitamin responsible for the prevention of scurvy and probably involved in the maintenance of healthy blood-vessels, is a simple substance, closely related to the sugars, with the formula C₆H₈O₆. It was the first vitamin to be completely synthesised and can now be bought

in the pure state. It occurs naturally in most fruits and green leaves, and also in many root vegetables, though in varying amounts. It is much less abundantly present in milk and fresh meat. Birds and mammals appear to store ascorbic acid in their adrenal glands.

There are probably several forms of vitamin D, but the two most important are those found in cod- and other fish-liver oils and a crystalline product, calciferol, obtained by the action of ultra-violet light on ergosterol, a complex alcohol present in most vegetable oils, though sometimes only in almost insignificant quantities. The chemical structure of calciferol, $C_{28}H_{44}O$, though very complex, is quite precisely known. Vitamin D, which controls the concentration of calcium and phosphorus in the blood and is consequently essential to prevent rickets, osteo-malacia and other related disturbances, does not occur abundantly in any food-stuffs, though milk, butter and eggs are useful sources. The chief medicinal sources are cod-liver oil and calciferol. Under the influence of ultra-violet radiation, whether solar or artificial, mammals, including man, and birds appear to make their own vitamin D.

Vitamin E, necessary to maintain full-term pregnancies in mammals, is found mainly in the germs of seeds, especially wheat, and green leaves.

For the dietician, and to a less extent for the cook, this growing knowledge is useful, not only because it justifies their belief in the value of dairy

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and garden produce, but chiefly because it gives them valuable pointers as to the conditions of cooking that will permit the vitamins to survive. In any event, a varied diet, with a sufficiency of milk and vegetable products, should give adequate protection against vitamin deficiency.

A perfect diet must fulfil the following conditions :—

- (a) It must contain all the proximate principles, plus a sufficiency of vitamins.
- (b) It must contain them in proper amount and proportion.
- (c) It must be adapted to the age of the individual.
- (d) It must be adapted to the work that he does.
- (e) It must take into account the climatic conditions under which he lives.
- (f) It must supply him with the requisite amount of nutritive material to repair waste and to produce heat and energy.
- (g) It must be in a form that is easily assimilable, digestible, palatable, and satisfying.
- (h) It must be reasonably economical.

A diet may be ideal so far as *a*, *b*, *c* and *d* are concerned, but may utterly fail to fulfil the other conditions. Conversely, it may satisfy the latter, but may fail so far as the former are concerned. In either case, it would not be a perfect diet.

The tests that we apply to find out if a diet is perfect may briefly be grouped in four categories. The first

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concerns the constituents of the food-stuffs used, and the test is devised to find out what amount and proportion of the proximate principles are present. This is a test that the ordinary diner cannot apply. The chemical analysis of food-stuffs is a complicated and intricate business that must be left to experts. Fortunately, nearly all our food-stuffs have now been so thoroughly investigated that their composition is well known. The following table gives some idea of what that composition is.

COMPOSITION OF SOME COMMON FOOD-STUFFS
(*Bulletin of United States Department of Agriculture*)

Nature of Food.	Protein.	Carbo- hydrate.	Fat.	Water.	Salts.	Fuel Value per pound.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Calories.
Raw lean beef (fresh)	24.2	...	3.7	70.8	1.3	615
„ sweetbreads .	16.8	...	12.1	70.9	1.6	825
Roast beef . . .	22.6	...	27.7	48.2	1.3	1620
Fried steak . . .	27.6	...	7.7	63.0	1.8	840
Canned beef . . .	39.2	...	5.4	71.9	2.5	600
Broiled lamb chop .	21.7	...	29.9	47.6	1.3	1665
Roast mutton . . .	25.9	...	22.6	50.9	1.2	1420
Scraped ham (smoked)	14.8	...	52.3	27.9	3.7	2485
Roast chicken . . .	21.5	...	2.5	78.4	1.1	805
„ turkey . . .	27.8	...	18.4	52.0	1.2	1295
Canned salmon . . .	25.4	...	12.1	63.5	2.6	915
Boiled halibut . . .	18.6	...	5.2	75.4	1.0	564
Fresh oysters . . .	6.0	3.3	1.2	88.3	1.1	230
Boiled hen's egg . . .	13.6	...	12.0	73.2	0.8	765
Fresh butter . . .	1.0	...	85.0	11.0	3.0	3605
Cream cheese . . .	25.9	2.4	33.7	34.2	3.8	1950

GENERAL PRINCIPLES

COMMON FOOD-STUFFS—*continued*

Nature of Food.	Protein.	Carbo- hydrate.	Fat.	Water.	Salts.	Fuel Value per pound.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Calories.
Cow's milk . . .	3.3	5.0	4.0	87.0	0.7	194
Oatmeal.	16.1	67.5	7.2	7.3	1.9	1860
Sponge cake . . .	6.3	65.9	10.7	15.3	1.8	1795
Dry biscuit . . .	11.3	70.5	10.5	4.8	2.9	1965
Brown bread . . .	5.4	47.1	1.8	43.6	2.1	1050
White bread . . .	8.9	56.7	4.1	29.2	1.1	1395
Asparagus (boiled) . . .	1.8	3.3	0.2	94.0	0.7	105
French beans . . .	7.1	22.0	0.7	68.0	1.7	500
Boiled beetroot . . .	2.3	7.4	0.1	88.6	1.6	186
Dried beans (raw) . . .	22.5	59.6	1.8	12.6	3.5	1605
Baked beans . . .	6.9	19.6	2.5	68.9	2.1	600
Boiled potatoes . . .	2.5	20.9	0.1	75.5	1.0	440
Almonds	21.0	17.3	4.9	4.8	2.0	3030
Brazil nuts	17.0	7.0	66.8	5.3	3.9	3265
Bananas.	1.3	22.0	0.6	75.3	0.8	460
Apples	0.4	14.2	0.5	84.6	3.0	290
Peaches.	0.7	9.4	0.1	89.4	0.4	190

Knowing the composition of the food in the diet, it is further necessary to find out what is the energy value of the different articles on the diet list. This is determined by burning a weighed portion of the food in a special instrument called a calorimeter, and calculating the amount of heat that it produces. Such a calculation is made in "calories," a calorie being the amount of heat required to raise one kilogram of water one degree in temperature. We now know definitely the calorie value of all the proximate

principles of food, and it is no longer necessary to burn up a portion of any of the articles on the menu to find out what the heat value of that particular food is. All we have to do is to multiply the weight of each food by the definite calorie value which it has. Thus, the calorie value of protein is approximately 4, of fats 9, of carbohydrates generally 4. In other words, the combustion of one gram of fat produces 9, of one gram of protein 4, and of one gram of sugar also 4 calories. When we want to find out what amount of heat value exists in a diet composed of 100 grams of fat, 100 grams of carbohydrate, and 50 grams of protein, we get our figure by a simple arithmetical sum : $(100 \times 9 + 100 \times 4 + 50 \times 4 = 1500 \text{ calories})$. We are by no means certain yet whether the results obtained in the body by the natural combustion of the tissues and those in laboratory apparatus are identical. Nevertheless, very careful and precise experiments warrant the belief that the difference is very small, and may be disregarded for ordinary purposes.

We have still, however, to answer the question : Does the diet fulfil the other conditions? The digestibility of a food depends on various factors, and the laboratory test of placing a weighed quantity of food in a test-tube and digesting it with gastric or pancreatic ferments at a given temperature—digestion *in vitro*, as it is called—is open to grave objections. The only certain test is the length of time a particular food remains in the stomach, and that period neces-

sarily varies with different individuals. Here again, however, we have the results of a large number of very patient and painstaking investigations to guide us. From these it appears as a general rule that animal proteins are more easily digested than vegetable ones, that the flesh of adult animals is more easily digested than that of young animals, that stringy and fatty substances are not so easily digestible as lean meats and well-divided foods. We have also learnt that questions of taste and appetite are powerful factors in furthering the digestion of certain food-stuffs and retarding that of others, and that by proper preparation such as cooking, broiling, roasting, stewing, or baking, certain foods can be rendered more easily digestible. The physiological test must further take into consideration the age, constitution, habits, work, and environment of the individual, and must find out if the diet is palatable and satisfying.

Finally, there is the economic test. An ordinary diet must be cheap and economical. It is impossible, for instance, to give to the working man a diet which contains expensive articles such as salmon, truffles, and game. He must regulate his diet so as to obtain the maximum of energy and nutrition out of the minimum capital, and it is therefore necessary to bear in mind the relative commercial values of food as well as the physiological values. This much, however, is imperative; that the economic consideration must not be made the primary one in dealing with matters of diet. Poverty unfortunately does make it so in a large

number of cases, but a study of dietetics will often enable the individual to economise and yet enjoy a plentiful and nourishing diet.

An ordinary adult, doing an average amount of work, wastes his tissues to a certain extent every day. From the lungs he loses carbon at the rate of about 260 grammes per day; from the kidneys he loses nitrogen in the form of urea at the rate of about 18 grammes per day; in various other ways this output is increased—markedly so when he does active work, since every additional movement is at the expense of a certain amount of energy and tissue. The only way in which he can repair that waste is by taking food, and it at once follows that the minimum diet must be in sufficient quantity not only to repair the waste, but to put by some reserve material, and to compensate him for his loss of energy. The body consumes daily a certain amount of energy, which again is conveniently estimated in calories. The tissues must be kept at a certain temperature; energy must be expended in performing work—not merely manual work, but the work of digestion, secretion, excretion, and the ordinary work of the body; and a certain amount of heat is lost from the body by radiation and evaporation. In a healthy adult the amount of energy required for an average day's work is estimated to be approximately 2100 calories. This brings us to the second condition, namely, that the intake of food must be sufficient to balance, and a little more, the loss of energy that goes on. We have there-

fore two conditions to fulfil so far as the composition of diets is concerned: the repair of waste—that is, the adequate compensation for the carbon and nitrogen actually lost; and, secondly, the supply of additional fuel to enable the body to consume its due portion during the next twenty-four hours.

Various diets have been framed to fulfil these conditions. It is necessary to supply a larger amount of carbon than of nitrogen, and the easiest way to do so is to consume carbohydrate food which is relatively rich in that element. But such food does not contain nitrogen, and, if we merely eat carbohydrates, we shall supply an excess of carbon and still have to make up the deficiency of nitrogen. The nitrogen must come from the proteins, and we are therefore in a position to appreciate the indispensable value of this latter form of food. Without protein there can be no repair of the tissue waste; other foods may supply us with heat and energy, but protein alone is able to compensate us for the loss of nitrogen and to repair tissue waste. A man can easily subsist on protein food and water; for, if necessary, the body can form fat from the protein itself. But by subsisting on an exclusively protein diet he throws a great strain on his excretory organs, which have to eliminate the end products of protein digestion of which the tissues cannot make use, and he also obtains a relatively small amount of carbon. The true way out of the difficulty is to combine the different food-stuffs, and the endeavours of dieticians have been directed to ascertaining which

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combination works the most satisfactorily. In order to give the reader some idea of the various points involved, it may be interesting to detail some of the more generally accepted "standard diets" which have been framed on physiological principles. The following table, drawn up from various sources, has therefore been compiled to show these diets, and, as a corollary, the actual amounts of food consumed by various individuals in different parts of the world:—

Nature of Occupation : Subject.	Food consumed per day (in grammes).			Fuel Value (Calories).
	Protein.	Fat.	Carbo- hydrate.	
Chinese woman on fruit diet (Jaffa)	33	59	150	1300
Japanese medical student (Os- hima)	64.7	51	469.6	2305
Boy (on fruit diet) (Jaffa)	27	56	152	1255
Japanese Military Cadet (Os- hima)	72.3	11.7	618	3021
Japanese merchant (Oshima)	81.5	19.6	366.2	2082
Average American (U.S.A. Re- ports)	100-175	2700-5500
Yale University athlete (U.S.A. Reports)	171	171	434	4000
Harvard University athlete (U.S.A. Reports)	160	170	448	4500
Harvard footballer	270	416	710	10,700
American doctor	104	125	432	3100
Rubner's Standard Diet	165	70	565	3644
Playfair's " "	185	71	568	3750
Voit's " "	118	56	500	3000
Atwater's " "	150	150	500	4060
Chittenden's " "	60	28	250	1500
Hirschfeld's " "	40	150	200	2300

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Nature of Occupation : Subject.	Food consumed per day (in grammes).			Fuel Value (Calories).
	Protein.	Fat.	Carbo- hydrate.	
Swedish labourer	189	110	714	4200
Russian „	132	79	584	3430
Italian „	115	26	696	3500
English weaver	151	100	469	3300
Malay fisherman	73	30	472	2512
Trappist monk ¹ (Atwater). . .	68	11	469	2304

From this table it is evident that the average consumption of protein may be placed at something between 50 and 100 grammes per day, and the average fuel value of a proper diet between 1500 and 2500 calories. The lower figures are minimal ; the highest figures in the table—those of the diet of the Harvard football player—must be regarded as indicating “luxurious living.”

Of late years several physiologists have investigated the conditions under which it is possible to decrease the amount of protein diet, and thereby the quantity of food consumed, without affecting the individual adversely. Chittenden, who has given his views very clearly and succinctly in *The Nutrition of Man*, is the great advocate of the spare diet. His conclusions may be stated in his own words :—

“For a man weighing 80 kilos, or 154 pounds, there would be required daily say 60 grammes of protein food to meet the needs of the body. These

¹ See footnote on page 35.

are perfectly trustworthy figures, with a reasonable margin of safety and carrying perfect assurance of being really more than sufficient to meet the wants of the body, adequate to supply all the physiological demands for reserve proteid, and able to cope with the erratic requirements of personal requirements" (*The Nutrition of Man*, p. 271).

To give the reader some idea of the actual amount of food necessary to be consumed to provide for this daily amount of 60 grammes of protein, Chittenden publishes a table showing the heat value of several selected foods which yield the appropriate quantity of protein. The following few items are copied from that list :—

Sixty grammes of proteid are derived from—

Half a pound of raw beef (fuel value 308 calories).

Nine eggs (fuel value 720 calories).

Seven-eighths of a pound of bacon (fuel value 1820 calories).

Half a pound of cheese (fuel value 1027 calories).

One and one-third pound of white bread (fuel value 1520 calories).

One and two-thirds of a pound of rice (fuel value 2807 calories).

One and seven-eighths of a pound baked beans (fuel value 1125 calories).

Two-thirds of a pound of almonds (fuel value 2020 calories).

Ten pounds bananas (fuel value 4500 calories).

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Thirty-three pounds apples (fuel value 9750 calories).

Two and one-fifth pounds of oysters (fuel value 507 calories).

From these figures it will be seen that considerable ingenuity must be exercised to obtain the requisite amount of protein material plus the requisite amount of fuel value in regulating the diet. Chittenden's standards are undoubtedly too low for the average individual. His dietaries given in the work already quoted are by no means such as will satisfy the requirements of a gastronome.

In considering any diet we have, as has already been said, to take into account the digestibility and physiological value of food. Some foods are physiologically more valuable than others which may contain the same proportion of proximate principles, because they are not only more digestible, but also because their principles are more easily absorbable and assimilated by the body. Thus while the simple proteins are true foods, the albuminoids are not foods but merely food spacers. They cannot themselves repair the tissue waste, but they can assist the simple proteins to do so in a manner which is not yet understood. Gelatin is not a food, but it is a useful adjunct and a very valuable addition to a normal diet, as every dietician knows. As Chittenden remarks: "The true nutritive value of any protein food is dependent not alone upon the

amount of protein contained therein, but upon the quantity of protein that can be digested and absorbed, and the same rule holds good for both fats and carbohydrates." Experimental research has shown that out of every 100 parts of animal protein 97 are digested and made available, while only 87 per cent. of vegetable protein is absorbed. Nearly 98 per cent. of carbohydrate is absorbed and nearly 95 per cent. of fat. It is possible that a thoroughly absorbable diet is not an unmixed blessing. The indigestible residue has a certain value in promoting the action of the bowels and in stimulating the intestines, which, in persons liable to constipation, is particularly useful.

THE DIGESTION OF FOOD.—A simple diagrammatic representation of the alimentary canal shows it to be a convoluted tube, of varying calibre, richly endowed with blood and lymphatic vessels and with nerves ; lined inside with a delicate mucous membrane in which occur a number of highly elaborated glands secreting certain special digestive juices or ferments ; possessed of a power of contracting and expanding, and of certain muscular movements which encourage the progress of food through the tube ; and, finally, relatively insensible to the ordinary stimuli such, for instance, as affect the skin. Starting with the mouth, we find that the teeth are specially adapted to deal with food in its raw state, the front teeth to bite and tear the food into pieces, and the back ones to grind it into a more or less homogeneous mass which can be intimately mixed with the digestive

juices poured out into the mouth by the three sets of glands which directly communicate with the oral cavity—the parotid, the submaxillary, and the sublingual glands. These glands furnish a fluid which has certain definite functions, and the mastication of the food itself is assisted and augmented by the muscular movements of the tongue and soft palate. When the quantity of food dealt with in the mouth has been sufficiently triturated, it is swallowed, by a movement which is to a large extent involuntary and reflex, and passes down into the stomach, through the narrow gullet or œsophagus which, by contracting round the bolus, forces it downwards into the chief receptacle. In the stomach two separate sets of glands pour out special digestive fluids which act upon the food, further digesting and preparing it for assimilation in the intestine. The anatomical arrangement of the stomach is such that its contents are kept in it until they are in a fit state to be ejected, through the pylorus, into the duodenum or commencement of the small intestine, where they meet with the bile and the pancreatic ferments which further digest them. In the small intestine digestion proceeds actively, and the food is finally broken up into the forms most easily assimilated or excreted. The valvular arrangement which guards the entrance of the large intestine performs here the same function that the pylorus undertakes in the stomach; once the contents of the small intestine pass into the large there is, probably, no further digestion. The large intestine is merely a

reservoir, and, as the food travels along it, the nutritive element is gradually taken up, the waste products which can be dealt with by the excretory organs are eliminated, and the final residue, with which the tissues cannot deal, is passed on into the rectum and excreted as fæces.

Such, in *précis*, is the process of digestion and assimilation of food in the digestive tract. When we consider it in more detail, we are at once struck by the marvellous mechanism which nature has provided to deal with every dietetic possibility that can arise.

The digestive ferments excreted by the salivary glands act only on the carbohydrate molecule of the food. Saliva consists largely of water, mixed with mucus and inorganic salts held in solution and containing a definite digestive ferment known as ptyalin, which has the property of breaking down starch into sugar. It is a vehicle for blending the food eaten, for lubricating the mouth, for dividing and mixing the food, and finally for acting on a certain part of it—the carbohydrate part only—and rendering it more easily digestible. Starch, as such, is insoluble; by changing it into soluble starch or dextrin, and by further splitting up this dextrin into a soluble sugar, the saliva helps to enable the absorbing parts of the digestive tract to assimilate it. The salivary ferment can only act in a neutral or slightly alkaline medium; a very small amount of acid prevents its action entirely. This point is of importance to the diner. If there is decomposition in the mouth, due to the presence of

foul or carious teeth, the saliva no longer blues litmus paper but reddens it ; in other words, there is an acid present and the action of the salivary ferment is inhibited so that the preliminary digestion of starchy food is no longer carried out. Similarly, the addition of acid sauces or drinks to a meal composed of starchy foods prevents the ptyalin from converting the starch into sugar.

In the gullet no digestion takes place ; the food is merely gently pressed on to the stomach. Here the salivary digestion stops. The stomach glands excrete two kinds of fluid—an acid (hydrochloric acid) and a digestive ferment known as pepsin, and it is probable that a compound is formed between those two juices which is the really active agent in gastric digestion. We owe most of our knowledge of stomach digestion to the careful observations of Dr Beaumont on the Canadian trapper, Alexis St Martin—who, in the course of his trapping, had the misfortune to be shot in the stomach by the accidental discharge of his gun—and to Pavlov's more recent work. The latter found, while experimenting with a dog, that an increase in the diet was followed by an increase in the quantity of gastric juice poured out ; that no juice is excreted when the animal is starved, but that the smell of food produced an abundant secretion, although the chewing of a bit of dry wood or some shreds of paper did not produce the same effect ; that the amount of digestive ferment excreted corresponded to the amount of protein food

given, and that there was a marked diminution of secretion when the animal was tired or sated. These results are, after all, conclusions which a study of dietetics and the physiology of taste, on which Brillat-Savarin laid so much stress, would have anticipated, but Pavlov has at least the merit of demonstrating their truth to the satisfaction of scientists who refuse to be convinced by lay cooks !

The stomach fluids deal chiefly with proteins, which they convert into soluble peptones, the intermediate stage of protein digestion producing proteoses, or altered protein precipitated by alcohol and only slightly diffusible. The hydrochloric acid present in the gastric juice acts upon the cane sugars, and has a direct antiseptic action, destroying the bacteria which are swallowed in the food. The acid and pepsin are also valuable in breaking up certain poisonous substances which would otherwise be harmful to the tissues, and act upon the protein that envelops fats, setting free the fat globules. They have no action on the fats themselves.

The glands of the stomach are directly under the control of the nervous system, and it has been found that the chief nerves concerned are the vagi. When these are cut, the reflex secretion which occurs when the dog chews is stopped, although the animal will go on chewing and there is apparently no diminution in its appetite. The vagi are the inhibitory nerves of the heart, and it is easy, therefore, to see that there is ample ground for the belief that overloading the

stomach, or errors in diet, may cause functional disturbances of that organ. The nervous control of digestion is even more delicate in the intestines—a fact which is readily appreciated by anyone who has found his appetite suffer through nervous worry or strain.

The food in the stomach is thoroughly subjected to the action of the gastric juice by the contracting, peristaltic movements of the stomach itself. When the process of digestion has proceeded sufficiently far, the pylorus, hitherto closed, expands, and a portion of the stomach contents is squeezed into the small intestine, where it meets with three kinds of digestive juices—the bile, the pancreatic juice, and the succus entericus. Bile has comparatively little digestive action by itself, but in conjunction with the pancreatic juice it exerts a marked digestive action upon the fats. Pancreatic juice contains four definite ferments—trypsin, a proteolytic ferment which has the power of completing the protein digestion that has been begun in the stomach; steapsin, a ferment that splits up fats into fatty acids and glycerin; a milk-curdling ferment; and amylopsin, a ferment which completes and augments the digestion of starchy foods. Trypsin is a much more powerful digestive ferment than pepsin; it not only converts the protein into soluble diffusible protein, but it further splits it up into end products, so that the tissues can deal only with the nutritive element of the food. It acts in an alkaline medium, not like pepsin in an acid one, and its action

is quicker and surer than that of the gastric juice, although it cannot deal with one or two albuminoid substances. In general, however, it effectually digests certain proteins which are left untouched, or relatively untouched, by the gastric ferments. The milk-curdling ferment is of little importance, since the milk-curdling ferment in the stomach (rennin) is usually quite sufficient to cope with whatever amount of that fluid is ingested. The amylopsin, however, is one of the most important of the pancreatic ferments; on it falls the main task of dealing with the starch that is consumed, since the saliva can only act for a relatively short period of time. The fat-splitting ferment, in conjunction with the bile, forms first an emulsion with the fat globules, and then decomposes the fats into fatty acids and glycerin. The digestive fluid secreted by the glands of the small intestine is called succus entericus, and contains a powerful inverting agent, a ferment that has the property of converting cane sugar into grape sugar, a form in which this carbohydrate is absorbed and assimilated. In addition, there are various other substances elaborated in the intestine, possibly including certain hormones, which are regarded as the stimulants for the secretion of the ferments themselves, or their precursors, as physiologists say.

We have seen that up to the time when the food leaves the stomach it is being acted on by an antiseptic medium. Once it gets into the small intestine this antiseptic action stops. The pancreatic juice is

alkaline and has no bactericidal properties, and in the small and large intestine bacteria flourish. These bacteria have the power of further decomposing the products of pancreatic and intestinal digestion, and act on all the food constituents, although it is not yet known exactly in what manner. Under certain conditions, their analytic action is harmful to the organism when it produces excessive decomposition and assists putrefaction; in other circumstances, it may be a special safeguard to destroy the poisons contained in certain articles of food.

When the food enters the large intestine it has been robbed of most of its nutritive value, and, during its passage towards the rectum, it gives up its water and some of the end products which may or may not have some value to the organism. In the stomach a small portion of the soluble part of the food is absorbed by the blood-vessels; in the small intestine the greater part is taken up by the lacteals and the blood-vessels. The carbohydrate is taken up in the form of sugar and stored up in the liver as glycogen or animal starch. The proteins are absorbed as peptones and proteoses, but immediately after absorption are changed back into animal albumins, and a certain proportion is absorbed at once as soluble protein. The generally accepted opinion is that fats are taken up in the form of fatty acids and glycerin, and are immediately changed back into fats within the cells of the intestinal folds.

The waste products of digestion, the residue which

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is valueless to the tissues, are eliminated from the body by the kidneys, the bowels, the lungs, and the skin. The bowels deal with the insoluble residue, the indigestible and undigested constituents of food, which are excreted as fæces. The kidneys eliminate the soluble waste products, and the skin and lungs deal with relatively small quantities of the waste that circulates in the blood stream. The rapidity with which these organs deal with the valueless waste is strikingly demonstrated after eating asparagus.

It must never be forgotten that the capacity of individuals to deal with the food that is eaten varies enormously. Environment, habits of life, age, and temperament—and, above all, idiosyncrasy—will influence the digestive processes to some extent. The average capacity of the adult stomach is about eight pints, but naturally the size varies immensely according to the habits of the individual. When a full meal is eaten, especially when aerated waters are taken, the organ may be very much dilated without the diner experiencing any inconvenience or discomfort. When there is any impediment to the proper outflow of stomach contents, or any weakness of the musculature, the dilatation may reach enormous dimensions. The average time taken to digest an ordinary meal in the stomach is four to six hours, but the length of time depends largely on the nature of the food eaten. As a general rule, the contents of the stomach begin to be expelled into the small intestine half an hour after the food has arrived in the stomach, and from that time

the pylorus opens at regular intervals to eject portions of the partly digested food. The subject of the passage of food along the alimentary canal has been exhaustively investigated by physicians who have availed themselves of the X-rays to trace the gradual course of the intestinal contents, and much valuable information has been derived from this method of investigation.

The importance of duly masticating the food is insisted upon by all writers on dietetics. Celsus was of opinion that every mouthful should be chewed about forty times. Bolting the food has been the cause of great physical suffering, and, if we are to believe the enthusiasts, of national disasters as well. Napoleon at Borodino and Leipzig suffered from indigestion, and on the third day of the battle of Dresden his faculties were impaired owing to his gluttonous predilection for a dish of shoulder of mutton stuffed with onions, "a delicacy," remarks Hayward with the contempt that a gourmet feels for tastes which he cannot appreciate, "only to be paralleled by the pork chops with which Messrs. Thurtell and Co. regaled themselves after completing the murder of their friend, Mr Weare!"

At any rate, all writers on the art of eating lay great stress on the point that the food should be taken leisurely and with deliberation. "Dwell on every morsel," advises Berchoux, "and its taste and delicacy will be appreciated the longer." The modern cult of "Fletcherism," in which the mouthfuls

of food are masticated several dozen times, is as old as the early writers on dietetics. Avicenna thinks that the proper way of eating is to chew every mouthful sixty times; when one bears in mind that the food of the nomad Arabs is more often hard and stringy, the importance of this advice is obvious. Vegetable eaters especially deserve to pay attention to this matter of "fine chewing." The digestibility of vegetables and fruits is interfered with when they are swallowed whole. A boiled turnip, roughly chewed, digests in about four hours; a similar quantity of the vegetable, boiled in the same manner, but carefully mashed and methodically triturated in the mouth so as to mix it thoroughly with the saliva, digests in three-quarters of an hour less time.

Certain concomitants taken with food interfere with digestion or alter the rate at which the food leaves the stomach. When oil is given in the form of salad oil, or as melted butter, it is rapidly ejected from the stomach and its digestion is entirely a matter for the small intestine. A vegetable eaten with oil remains in the stomach for a shorter time than one which is taken with salt only. The addition of vinegar or any acid to the dressing—lime or lemon juice, for example—slightly moderates the rapidity with which the stomach gets rid of the oil. Vinegar in some cases retards digestion, while in others it materially helps the breaking up of the food. As an example of the former case one may cite pickled vegetables, which have been prepared in vinegar. Such vegetables take

half as long again to digest as when cooked or prepared with oil as a salad. In the case of fish and certain meats, the addition of vinegar aids digestion by causing the fibres to swell up and therefore allowing the gastric juice greater freedom to act on every part of the meat. The use of vinegar with vegetables, especially raw vegetables, should therefore be very sparing. If an acid is wanted, a vegetable acid juice—such as lime juice, lemon juice, quince water, or coconut milk—should be preferred when obtainable. It need not be added that where vinegar is used it must be pure wine-vinegar. Nothing can be more objectionable in cookery than the use of “strengthened” vinegars, of which the basis is acetic acid diluted with flavoured water.

An important alteration in the food-stuffs is effected by the action of tannin upon them. Tannin, or tannic acid, is a constituent of many beverages. For instance, tea contains it in a fairly large amount; red wines, especially the Burgundies and Bordeaux, possess a relatively high percentage. When this is allowed to act on protein, it causes a precipitation or coagulation which makes the protein more solid and retards the action of the gastric ferments upon it. The use of tannic acid-containing beverages with meats should therefore be sparing. A small quantity of red wine, diluted with water, does not interfere with the digestion, and the allegation that it is constipating, since tannic acid is a constipating agent, need not be seriously considered. On the other hand, the liberal

washing down of a meat dinner with quantities of strong tea is to be condemned. Tea after a dinner is to be deprecated, and even where the dishes have been wholly of a vegetarian character the subsequent drinking of tea should be dispensed with. If tea is taken at all, it must be used some hours before meals or between meals—not immediately before or after a meal. China tea, which contains less astringents than Ceylon tea or Indian tea, is to be selected in preference to the latter. The addition of milk to tea usually neutralises the tannin.

Alcohol as ordinarily used at meals—and we refer more especially to the Continental fashion of partaking of wine diluted with water—does not in the least interfere with normal digestion, and in some cases appears to be of valuable assistance to the diner. Certainly it gives a pleasant variety to the meal, and from a purely gastronomic point of view its use is therefore to be highly recommended. A series of experiments made in 1909 by the writer with certain commonly used food-stuffs gave some interesting results, and although it cannot be held that the facts obtained from isolated investigations, the results of which to a certain extent depend on individual idiosyncrasy, are in any way conclusive, they nevertheless yield encouraging data in support of the old contention that a moderate use of alcohol aids digestion instead of retarding it. The wine used in these experiments was a well-matured and relatively high-alcoholised Château Yquem, and the method was to drink it undiluted, care

being taken to chew the food more or less equally in all the experiments. A large number of dishes were tried, and the stomach contents—obtained by washing out the stomach with a tube some time after the meal had been eaten—were carefully examined. The experiments showed that a simple meal (omelette d'espagnole, mutton cutlet, and crème caramel), taken with a few wine-glasses of lemonade, took four and three-quarter hours to leave the stomach; an exactly similar meal, with three glasses of Château Yquem substituted for the lemonade, was digested half an hour earlier; a meal of oysters, tea and bread-and-butter was digested in five hours; one of oysters, bread-and-butter and wine in just under five hours. Somewhat similar results were obtained in 1926 by repeating the test meals under more or less the same conditions. The results are probably as much due to the physical stimulus of the wine as to any actual effect which the alcohol has upon digestion; and I prefer to deduce from them the rule that alcohol taken in moderation—as all drink should be taken—at meal times is not detrimental to digestion, rather than to say that alcohol is a distinct help to digestion *qua* alcohol. Large quantities of alcohol before, after, or during meals, and the use of highly alcoholised pick-me-ups and cock-tails, no one who has any regard for his health or stomach will be likely to defend. Their use is detrimental to taste, and owing to that, apart entirely from the question of any specific action upon the food, they may be regarded as interfering with digestion.

A further matter to be considered is the effect of smoking on digestion. The custom of starting a heavy cigar immediately after a meal is one which no gastroscoph will indulge in. On the other hand, a mild cigar or a cigarette, slowly smoked and the smoke never swallowed or inhaled, is probably without any material influence on digestion one way or the other. The addition of tobacco juice to saliva retards the action of the ptyalin, and similarly the addition of the juice to gastric and intestinal digestive ferments interferes considerably with their activity. But this does not imply that the smoking of an after-dinner cigar, provided it is mild, will have the same effect upon the digestion of food as the mixing of a certain quantity of pipe-refuse with a "digest" in a test-tube. The after-dinner smoker does not salivate: he smokes dry, and, if he cannot do so, he ought to abstain from smoking immediately after a meal. So long as he does not swallow his saliva, the actual smoking will have little effect upon his digestion. The theoretically inhibitory effect of smoking on the gastric and intestinal secretions, by altering the blood-pressure and modifying the heart's action, is more than counteracted by the psychical stimulus of the habit. As a matter of fact, the eating of nuts and the drinking of inferior port after a meal do more harm to the digestion than the smoking of a cigar or cigarette, or even a pipe. "Un bourgeois seul," said Carême disdainfully, "casse des noisettes après son dîner." But the custom of partaking of a heavy and indigestible

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dessert is not nowadays confined to the middle classes, but is seen at every dinner. In the circumstances, those who love to indulge in a smoke, after having dined wisely and well, may rest under the satisfaction that they are no worse offenders against the laws of dietetic hygiene than those who linger over the wine and the walnuts.

Footnote to page 17.

Van Ramunde (*De voeding der Trappisten*, 1911) published some interesting particulars regarding the dietetic conditions under which the members of the order live. He investigated the tissue metabolism of several brothers and paters, and for a short time lived on the same diet. The Trappists, as his observations confirm, are lactovegetarians, but abstain wholly from meat, fish, and eggs. They take milk and cheese and cream, together with wine and beer and certain liqueurs. The lay brothers who do agricultural work have a very liberal dietary, more than 5000 calories, while that of the paters is somewhat lower in caloric value. The daily amount of protein consumed by a Trappist averages 150 grammes. The food is prepared in a highly palatable manner at an average cost of just below ninepence per head per day. Voit's investigations on the Trappists in a German monastery were hardly so generally favourable; he found that the brothers were on the whole insufficiently fed, since they took on an average only about 60 grammes of protein per day, even when working in the garden. Van Ramunde, on the other hand, thinks that the diet is quite sufficient, and that there can be no question of underfeeding. The average age reached by the monks—lay brothers as well as fathers—is 56½ years. No conclusions in favour of a purely vegetarian diet can be legitimately drawn from these facts.

CHAPTER II

TASTE

“ We have one and the same name for the faculty which comprehends a sucking-pig and for that which delights in Beethoven, for the appreciation alike of a Strasbourg pie and of the Elgin marbles—taste.”—KETTNER.

THE organ of taste is the tongue, which is supplied with special taste buds capable of distinguishing between salt, acid, bitter and acrid flavours. These four are in reality all that we can properly distinguish. Insipidness, or tastelessness in food, is caused by a want of one of these perceptions by the tongue. But the sense of taste is in close alliance with the sense of smell, and we appreciate the finer niceties of what we eat not by the taste buds of our tongue alone, but by the ramifications of the olfactory nerves at the back of the nose as well. Wine connoisseurs know this fact perfectly well. In sampling a wine there is, apart from the æsthetic factors of colour, consistency, and clarity of the liquid itself, three important matters to be taken into consideration. The first is the bouquet, or smell of the wine, which is the stimulation of the olfactory nerves by the aromatic and volatile esters when the wine is smelled. It is something quite apart from taste, and purely a matter of smell, yet it means

much in the appreciation of a fine wine. The second is the aroma, which is both the subtle apperception of the taste of the wine and the recognition of less volatile esters that, with the warmth of the mouth, are rendered more volatile and impinge on the filaments of the olfactory nerves when the wine is taken and held in the mouth. The aroma of wine is a blend of smell and taste, and serves to show the intimate connection between taste and smell. There is, thirdly, the body of the wine, the sense of fruitiness, of strength or weakness as compared to other wines, that the drinker has when he tastes the wine. That, too, is a blend of taste and smell, in which taste, however, plays a greater *rôle* than mere smell.

It is easily demonstrable that we cannot taste any substance that is insoluble. We cannot taste wood, or iron, or some fabric that is not capable of yielding some of its constituents in a soluble form. If a fabric is impregnated with some chemical that can be dissolved in water, we can taste that chemical, but otherwise all we can say is that we have in our mouth something that we are conscious of through our sense of feeling, but that has neither taste nor smell. True physiological taste is confined to a differentiation between acid and salt substances, bitter and sweet, and that curious sensation that we term acrid taste, something that is astringent, rather unpleasant, but that has certainly no connection with sourness, sweetness, bitterness or saltiness. Yet, as a matter of fact, we are conscious of an innumerable variety of tastes. None

of us could appreciate good cookery, in its varied refinements, if we did not possess the faculty of distinguishing between these varieties. They are physiologically all variants of the four principal tastes—sweet, bitter, salt and acrid—augmented by the impression received when we experience them from the olfactory nerves. Taste and smell are so intimately blended that the one without the other would leave us bankrupt of nearly all that makes life worth living to the diner.

Like all the other senses, taste can be cultivated and improved or neglected and allowed to degenerate. By practice it can be so refined that an individual is able, by his palate, to perform wonders in distinguishing such subtle variations as are scarcely appreciable to the untrained palate. The wine taster can not only tell the age of a particular wine, but can faithfully declare the particular vineyard where it was grown; the tea taster can easily differentiate between a hundred samples of different teas. Meticulous refinement of this sort is scarcely necessary in the ordinary diner, but no one can appreciate good food, and its artistic presentation, unless he has devoted some time and trouble to cultivating his palate.

There is, of course, no golden rule for such cultivation. In æsthetic taste—the appreciation of Beethoven, to which Kettner referred, for example—there is a more or less conventional standard, fixed by what we regard as expert opinion. Literary and artistic

taste depends on culture, on the realisation of a sense of the beautiful. Culinary taste, though some may regard it as on a much lower level, depends equally on a sense of what is comely, and need in no way yield pride of place to other tastes, for it connotes a degree of culture and refinement akin to that possessed by one who is worthy of being termed civilised. Its training needs as great care and circumspection as are necessary in the training of any æsthetic sense, while at the same time it allows for individual discrimination and preference, simply because canons of culinary taste are not valid for all and everyone. They are not static, axiomatic truths, but are generalisations subservient to individual caprice and liking.

The truth of this assertion is abundantly shown in the history of dining. Queer, strange tastes, likings for bizarre condiments and dishes, a relish for food-stuffs that in some of us may evoke feelings of repulsion, and almost of nausea, and an equally strange abhorrence of what we ourselves care for and appreciate, are copiously revealed in the writings of many authorities on dietetics. It is common knowledge that the culinary tastes of various races, and even those of peoples living close together, differ widely. National cookery, when one comes to study the subject, is not so much a question of method as of a predilection for food of a particular type, prepared according to a particular way and seasoned in conformity to communal taste. Such national taste is more or less a matter of environment. The Bengali, for example, is

vegetarian not because he prefers a fleshless diet, but simply because he cannot obtain sufficient meat; if he could he would be as much a mixed feeder as his Mohammedan fellow-countryman. The Central African native lives largely on cereals for the same reason. Our own western civilisation is rapidly becoming a community that lives on tinned foods because these foods are cheaper, more easy to prepare, and, generally speaking, quite satisfactory to the palate, however much they may lack in nourishment and palatability to those who are accustomed to fresh meats and vegetables. The ancient Romans ate birds' tongues, a thoroughly unappetising, stringy dish, only rendered eatable by piquant sauces; the Chinese love age-old eggs whose taste is repulsive to most of us. We ourselves eat Limburger cheese, and thoroughly appreciate it, though its flavour and rankness would nauseate a Zulu. Dr Doran, in his *Table Traits*, published in 1869, gives numerous instances of the vagaries of taste. Indeed, one need only peruse any book on cookery to find how widely the authors differ in their appreciation of various food-stuffs, how scornful they are of what they account bad taste in others, and how fondly they praise their own particular fancies. As Kettner has remarked, "He is an outer barbarian who does not agree with us about a leek or a peppercorn, a bit of pig's grease or a little oatmeal." So wide is the difference in interpretation that it is not to be wondered at that the ordinary diner has sometimes been tempted

to execrate these finicky niceties, that appear to him to be insufferable conceits, as pedantic obscurities wilfully designed for his perplexity.

Yet the question of taste and liking for particular food-stuffs demands, and is worth, the earnest and careful attention of every student of the art of dining. Luciani, the Italian physiologist, studied the subject carefully, and his book on *Hunger*, published in 1890, is a very interesting and instructive contribution to gastronomic literature, and still remains, possibly, the best exposition of the views held by science to-day. The experiments of Pavlov and others have conclusively demonstrated the importance of liking and taste as factors in the digestibility and assimilability of a particular diet. We are now fully aware that the whole process of digestion and assimilation of food is under the control of the central nervous system. Cornaro knew something about this fact when he stated that food that he did not greatly care for invariably disagreed with him ; on a dietary so carefully selected and balanced as his, it was comparatively easy to study the influence of the slightest variation. Doctors know, or ought to know, that marked distaste for any particular kind of food is usually accompanied by an equally marked inability completely to digest or assimilate such an article of diet, though, alas, the converse does not invariably hold good. Loss of appetite, which science calls anorexia, is in nearly all cases a sign of gross ill health, and in children especially it suggests that there is something radically

wrong in the manner in which they have been fed. Perversion of taste, happily, rarely occurs. In the young, in whom it is known as *pica*, it is usually a sign of malnutrition; in the adult it may be of far graver significance. Aversion to particular food-stuffs may be physiological, or rather psychical, or it may be pathological. Physiological aversion is caused by over-indulgence in food, and is almost always the result of intemperance and eating to repletion. Psychical aversion is produced by the subconscious connection of the particular article of diet that evokes it with some painful or disagreeable experience, recollection or impression that the diner is aware of. In some cases the individual may never even have seen the dish; the mere thought of it produces in him a sense of revulsion that may lead to an immediate reaction in the shape of nausea and vomiting. Convention plays a considerable part in these feelings, as is exemplified when we study the reaction of civilised mankind to what are called uncivilised foods.

The taste for human flesh is almost universally regarded as something pathological and barbarous. Yet it must not be forgotten that there is no inherent antipathy in mankind to the consumption of any meat. Our ancestors were cannibals, and there are still some native tribes among which the eating of human flesh is customary. In the literature I can find no first-hand account of the preparation and eating of human flesh up to quite recently. Several authors have described cannibal feasts. Junghuhn, who witnessed such

orgies in Battaland, was able to state what his informants told him about the taste and preparation of the meat, but had no personal experience of it. In 1932, however, Mr W. B. Seabrook, in his *Jungle Ways*, described his stay among the cannibal tribes of West Africa, and related his personal experience of eating human flesh.

“ I had requested, and been given a sizable rump steak, also a small loin roast to cook or have cooked in whatever manner I pleased. It was the meat of a freshly killed man who seemed to be about thirty years old—and who had not been murdered. The raw meat, in appearance, was firm, slightly coarse-textured, rather than smooth. . . . It resembled good beef. . . . I had determined to prepare the steak and roast in the simplest manner, as nearly as possible as we prepare meat at home. . . . The cooking odours, wholly pleasant, were like those of beefsteak.”

Mr Seabrook describes his sensations when preparing his beefsteak, and records his amazement to find that it was good to eat.

“ It was like good, fully-developed veal, not young, but not yet beef . . . and not like any other meat I have ever tasted. No person with a palate of ordinary, normal sensitiveness could distinguish it from veal.”

From this testimony it is plain that anyone, unknowingly eating human flesh, would most likely consume it with that degree of gusto and satisfaction that is engendered by his appetite, but the vast majority would recoil from it if they knew what it was, and label it off-hand as a most disgusting dish.

There are many food-stuffs, some highly nourishing and others less so, that stand in the same category. Frogs, whose hind limbs are as dainty and delicate as the finest chicken, snails that are both nutritious and appetising, the nasty smelling *durian*, whose flesh is like a rich custard, the ugly-looking pearl mussel that tastes like the softest marrow, and many other viands that are habitually eaten by both civilised and uncivilised peoples, are by others regarded as horrible concoctions not fit to be served at a decent table.

When one examines the position in some detail, it is difficult to see where one encounters what might be called the mean, or average, taste. Excluding such an out-of-the-way dish as human flesh, which the opinion of all mankind, practically, will at once declare to be beyond the pale, there yet remain a number of food-stuffs that do not, and cannot, conform to any special qualification of taste we may lay down. The meat of obviously diseased animals may appear to be equally unquestionably taboo; but in practice one finds that diseased meat is eaten in every civilised country, notwithstanding the strenuous activities of municipal authorities to see that only sound meat is consumed. Decayed food-stuffs, food-stuffs that have undergone degenerative changes by fermentation or putrefaction, we may also think disgusting. As a matter of fact, we find that they sometimes occupy high places in the list of edible delicacies. Many diners prefer that their meat, and especially the meat of game, should be hung until it

has certainly undergone slight putrefactive changes ; fermented vegetables are regularly eaten, and liked, by thousands ; no cheese is accounted "ripe" if bacterial action has not changed it into something quite different from what it was when pressed. It is quite true that there is a difference of opinion among the best epicures about the advantages to be gained from so altering the original flavour of the food. There are some (among whom I am one) who hold that a pheasant is at its best when cooked before it stiffens, and there are sound culinary reasons for this opinion. But the matter becomes more complicated when we wish to bring out special flavours, volatile substances that can otherwise not be obtained, by allowing the unsophisticated food to be acted on by ferments, acids, or bacteria. Then, as it appears to me, we have a perfect right to transform the food into something that may have no resemblance to its original purity, provided we do not turn it into something wholly indigestible and uneatable.

All these considerations suggest the desirability—indeed the urgent necessity—of paying special attention to the preparation and serving of food, and to follow the broad principles of dietetics without losing sight of the main point that in questions of diet it is imperative to individualise. At present our dietetic conventions are still largely regulated by custom and habit, and we are apt to forget that both may lead to the acquisition of tastes, inclinations, and aversions that may be detrimental to health. It is not possible

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strictly to conform to physiological rules in our eating. We cannot, for instance, always refrain from inhibiting salivary digestion by not using acid condiments or acid fruits, or from hampering gastric digestion by eating alkaline foods. Nor is it necessary that such strict observance of physiological considerations should guide us in our dining. So long as we remember that simplicity, frugality, and moderation, and the avoidance of excess in eating, flavouring or preparing food, are the basic principles to which we should adhere, it is not likely that we shall go far wrong in arranging our diet.

No one has done more to point out the importance of the senses as factors in promoting the assimilation of foods than Brillat-Savarin in his classic monograph on *Taste*. In his third Meditation he remarks: "Taste invites us by pleasure to repair the continual loss we incur by the action of life. It aids us to select from among the various substances which Nature offers those most suitable for food. It is powerfully aided by the sense of smell, and it may be asserted as a general maxim that nutritious substances are not repulsive either to taste or smell." That general maxim does not altogether apply, and the modern diner may be pardoned if he slips in the word "cultivated" before the word "taste." Brillat-Savarin defined three "orders of taste." The first is "direct sensation" that comes from the contact of the food substance with the tip and sides of the tongue; it corresponds to the physiologist's conception of taste

as the impression made on the nerve endings of the gustatory or taste nerve. The second is "complete sensation" felt at the back of the tongue; it is the combination of gustatory and olfactory impressions produced when the flavour of the food reaches the soft palate and the back of the nose. The third is "sensation of judgment," which he defines as "the impression on the mind reflecting upon the impression transmitted by the tasting organs." Physiologically it means the impression produced by the food in the act of swallowing, an impression in which tactile sensation has probably as great a share as taste and smell. Only when a man has swallowed a peach can he truthfully say: "That was delicious"; only when he has drunk a glass of Steinberg Auslese can he really taste, appreciate, and discern bouquet, body, aroma, and quality. The difference between a man who takes a nauseating medical mixture and one who leisurely sips his wine illustrates these principles. Savarin rightly insists on the fact, well known to every student of dietetics, that refinement of taste may be cultivated like every other sense.

It is such cultivation of taste, care and training of the palate to learn to appreciate the finer qualities of food, that the diner should carefully study if through a long or a short life he wishes not only to enjoy his food, but to extract the greatest benefit from it. In our language we have no good word to express one who has attained proficiency in judging the flavour and quality of food. The French use two words,

gourmand and *gourmet*, that are usually understood to imply such proficiency, but in reality they are distinct names for two widely different classes of diners. *Gourmand* simply means one who eats to indulge his taste, his appetite. It must be confined to those whose eating is ruled solely by their natural craving for food, and may, without injustice, be translated as "eater."

A *gourmet*, on the other hand, is one who tastes finely. He nibbles at things and cultivates a finicky delicacy of taste that revolts at the gross appetite of the *gourmand*. The English word *epicure* is more applicable to him than to the *gourmand*, but it does not really define him in all his glory. The *gourmet* will abstain from well-prepared food for which he may have a natural liking, on the ground that such food is not in season, or that it has been prepared in some way that violates the canons of good cookery as he understands them. He regulates his life by conventions of taste, and the vagaries in which he indulges are often as absurd as those of the faddist. For the *gourmet* is essentially a faddist—a faddist in matters of taste. An epicure is one who, while allowing taste to guide him in most things, and while condemning the indiscriminate indulgence of the *gourmand*, pays somewhat greater attention to dietetic rules, and eats his meals not according to stereotyped conventions, but with a careful selective activity that has won him the praise of all great cooks.

Kettner, in his article on the "*Gourmand*," points out that originally the word *gourmet* meant a young groom,

in which sense it survives in "bridegroom." The French adopted it, and put into it a meaning which it originally never aspired to, quite different from the meaning of the word *gourmand*, of which the English equivalent is one who gormandises. "It is certainly odd," he adds, "that Englishmen should have such an exalted idea of the sense of taste that they bestow its name upon the faculty of estimating all that is most sublime and beautiful in Nature and art, while they have no name left for the fine appreciation of food, for the enjoyment of the table, for the divine art of banqueting, which does not confuse dining with gorging and the gratification of the palate with the repletion of a sot."

It was left to Walker to coin such a word, and although it is perhaps not the most felicitous that could have been invented, it must stand for want of a better. He suggested the name *gastrosoph* for the supreme expert of the table, the cardinal of diners, the culmination of good taste and common-sense in the art of dining. The *gastrosoph* is neither a *gourmand* nor a *gourmet*. He is a person who has carefully studied dietetics and the art of eating, who pays the greatest attention to the general principles, and at the same time allows himself the widest latitude in applying them to his habits of dining. He is the dietetic artist, the expert who knows how to eat, when to eat, and what to eat; who never permits convention to interfere with his appreciation of a tasty and wholesome dish, and who despises the dictates of fashion

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that attempt to make him sit down to a meal that he cannot relish, or drink champagne when he prefers beer. He can appreciate vegetarian cookery when it is good, just as much as he can mixed cookery ; he can abstain from caviare when it is dry and hard without a pang, and dine off a Spanish onion, a bit of Parmesan cheese and black bread when he feels the inclination to do so. His dietetic life is ruled and regulated by moderation, sanity, discrimination, and controlled taste, not by arbitrary maxims laid down by authorities. He is the ideal that every diner should strive to attain to. For dietetics should be gastrosophy, the science and art of minding one's belly very studiously, of which Dr Johnson was not ashamed to declare himself a disciple.

CHAPTER III

FOOD IN RELATION TO AGE, WORK, AND ENVIRONMENT

“Men ought to beware that they use not exercise and a spare diet both ; but if much exercise, then a plentiful diet, and if a sparing diet, then little exercise.”—BACON.

THE age of the individual is of importance in estimating the amount and the nature of food required. It is obviously absurd to give to a young infant the same quantity of nourishment which a healthy adult demands. But some other considerations with regard to age are not so obvious, and it is therefore well to take the various stages in more detail.

INFANCY.—In infancy the dietetic needs of the organism are different from those at the time the milk teeth have erupted. The child's stomach is a narrow tube, practically a continuation of the gullet, from which it is differentiated at first merely by the presence of the glands secreting the gastric fluids. The intestinal digestive ferments are different from those which are found in the adult : they differ in quantity and in quality, and, above all, in the absence of certain special ferments. Thus, the rennet, or the special digestive ferment in the stomach which has the

power of curdling milk (chymosin), is well marked in the gastric juice secreted by an infant a month old, whereas the amylopsin in the pancreatic juice is almost absent (according to some authorities, totally absent), while the activity of the protein-splitting ferment, trypsin, is lowered. From this it is reasonable to infer that the digestion of starchy foods is difficult for the child. All that he has to aid him in the assimilation of such foods is the ptyalin of the saliva, and, owing to the fact that the food is swallowed rapidly, this ferment has very little chance of acting on the carbohydrate. Nevertheless, infants can digest carbohydrate food. Milk, their natural food, contains a relatively large amount of carbohydrate in the form of milk sugar, and the sugar-splitting intestinal ferment is fairly well developed in the newly born child. Bacterial digestion, too, must be allowed to exercise some influence on the digestion of starchy foods in infants; but even when we make every allowance, it is still evident that the conditions for the assimilation of carbohydrates are not so favourable in the infant as they are in the adult or the child. The infant has no masticating apparatus, and its mixing and triturating apparatus, so far as the mouth is concerned, is almost negligible. It must subsist on a fluid or semi-fluid diet which makes no demand on its masticatory organs. Nature has provided such a food in the shape of its mother's milk, which is the only perfect food for the infant. It is necessary to lay some stress on this point, for one of the dietetic

heresies of the day is that there are a variety of mixtures which are "just as good as mother's milk." It may be dogmatically stated that there is no mixture which is able wholly to replace that natural diet. We may, of course, combine milk foods and cow's milk to form a liquid which is practically identical with mother's milk, but the weight of evidence supports the view that such identity is never absolute. Wherever possible, therefore, the infant should be suckled. Where such feeding is impossible, owing to the weakness of the mother or for some other reason, recourse must be had to the artificially prepared mother's milk and the various infant foods which are now so easily obtainable.

CHILDHOOD.—In childhood the body is being built up at a fairly rapid rate. This stage is *par excellence* the period of growth; metabolism is at its height; the exchange is most active, and the influence of a deficient diet shows itself most quickly and most clearly. The average child needs a larger amount of fuel proportionately to body-weight than does the average adult. It needs more oxygen and more carbon, since its exchange of gases is more vigorous and its heat production greater. It needs therefore, as a corollary, not only more food, but more energy-giving and more tissue-building proximates, proportionately, than does the adult. The diet must not be calculated according to the body-weight of the child, and no attempt must be made to provide an exact balance between intake and output, since it

is evident that the child needs a surplus of energy and a reserve stock, and that its intake must therefore be larger than its output. In other words, overfeeding, in a physiological sense, must be the rule rather than underfeeding. These points deserve to be remembered, since they are of great importance, especially in children who do a certain amount of manual labour or in school children who indulge much in physical recreation. We have now recognised by law the principle that it is unfair to demand school-work from an underfed child, and the Provision of Meals (Education) Act has already been productive of a great deal of good.

The ordinary principles of dietetics should be insisted upon in drawing up a child's dietary. Variety, palatability, and an appetising preparation of the food are indispensable. The average child of a school-going age requires nearly 2000 calories per diem, and some care will have to be taken to provide the proper amounts of the different proximates in a suitably assimilable form. The simpler and the plainer the child's diet is, the better. Stimulants should be avoided, and strong beverages such as tea and coffee are all stimulants whose dietetic value, in the case of children, is very low. At the same time, it must be remembered that the second great consideration in a child's dietary is its digestibility. The first is obviously that the child shall receive a sufficiency of food; but unless this food is easily digested, energy is wasted and, from a physiological point of

view, the diet is therefore uneconomical. A more or less vegetable diet is unsuitable for the growing child; he requires a certain proportion of meat protein which, in the majority of cases, is best provided in the form of fish or red meats. Regularity and moderation in the diet are specially desirable, since dietetic errors in children may give rise to serious conditions of ill health.

ADOLESCENCE.—In young adults and in those who have passed the stage of puberty the output is still proportionately high, especially if vigorous bodily exercise is indulged in. The diet should therefore be nourishing and as liberal as in the case of young children, but there is scope for greater variety, and more stress can be laid on the cultivation of taste, since the adolescent can exercise a greater degree of discrimination in matters of food. In childhood the great stand-by in the diet is undoubtedly the carbohydrates—especially the sugars in the form of jams, and fats in the shape of butter, margarine, or dripping. In adolescence the love for sweet things will probably decrease, though the desire for sugar, in some form or other, will still be powerful, and will have to be met in the dietary. The transition stage between childhood and adult life in matters of diet is not very marked, and is usually disregarded on the assumption that a young man or young woman can support underfeeding and bad feeding better than the adult can. There is no greater fallacy than this. The adolescent is still building up his tissues; his

frame still needs raw material, not so much to replenish what has been used up to develop energy, but to form bone, muscle, and fat. He requires, therefore, a proportionately liberal diet, just as the child does, and any deficiency in the intake is sure to be paid for dearly in indifferent health and inability to perform his work properly.

ADULT LIFE.—At this stage the body has attained its full growth. Its metabolism is now a steady breaking up of tissues to provide energy and heat, and a steady repair of this waste by the raw material injected as food. Elaborate calculations have been made to show that in a certain period of time the body tissues are entirely renovated by this alteration of waste and repair. Sanctorius estimated this period as eleven years, which he stated were necessary for “remaking a man”; Bernouille thought three years sufficient; and Reil fixed the limit as low as one year, while Jean Paul favoured the mean of four and a half years. These arbitrary calculations have a purely academic interest, but they serve to show that it is possible to demonstrate, with some scientific satisfaction at least, that a regular building up, not of new tissues, but of old broken-down tissue, takes place. There is no evidence to show that the gaseous exchange in men is greater than in women, and body-weight does not seem to influence the process in any marked degree. It is now generally accepted that the determining factor is extent or area of body surface. A small thin man will have a less active gaseous

exchange than a woman of the same height whose extent of body surface is slightly larger. In old age and in childhood, on the other hand, there is a definite difference between the metabolism of the sexes, and the female has in general a lower rate of exchange than the male. During pregnancy the rate of metabolism is increased, but the subject is still being investigated, and we lack definite evidence to show in what way the metabolism is altered. The need in an adult pregnant woman for a nourishing diet is too obvious to need demonstration. In adults the diet should be slightly in excess of the output, since here, too, a reserve of energy is required.

THE EFFECT OF WORK.—Increased physical exercise necessarily means increased consumption of energy, increased production of heat, and increased tissue waste, since the heat and energy must come from the tissues themselves. The heat and energy producing foods taken in are only sources of potential energy; they must first be assimilated and rendered part of the tissues before they can be effectively utilised. Manual work of any sort means tissue waste, the extent of which will naturally depend on the character of the work done. It will also, to some extent at least, depend on the capacity of the individual to do work. If a sedentary man, who is unused to physical exercise, spends an afternoon in the billiard-room, or in a cycle ride, he will feel his exertion more than one who is in the habit of indulging in regular and more or less strenuous exercise, and the probability

is that his waste is proportionately greater during the time he works than in the case of the habitually active man. A sudden and unexpected strain on the tissue energy is generally responded to in a somewhat prodigal manner, whereas, if the individual is accustomed to constant steady work, the tissues have adapted themselves to the waste and are capable of meeting the demand with the least expense. The difference that hard manual work makes in the output is well illustrated in the table of diets showing the calories required by the working man under various conditions (see page 17). In arranging a diet to suit a particular class of worker, the important fact must be taken into account that digestion and assimilation of food are in themselves processes which may aptly be described as work. A certain amount of energy is wasted—or rather consumed—in digesting food; a certain amount is equally consumed in rendering available the products of digestion to the assimilative organs or to the excretory organs, as the case may be. To obtain the best dietetic results from a particular worker's diet, the food selected should therefore be of a nature easily digestible, so as to economise energy. The ordinary diet of a manual labourer is bread and meat, and probably, in view of the fact that this combination is fairly easily assimilated, it will be found the most economical.

Physical exercise immediately after a meal is generally deprecated, but recent investigations do not support the view that it is harmful to the process of

digestion to indulge in moderate work after a meal. The experience of ordinary life tends to show that the average worker does his work better after a meal than immediately before ; he draws upon his reserve stock of energy for the digestion of the food, and the process of digestion and assimilation goes on uninterruptedly while he resumes his ordinary physical work. Anyone who has done a long day's marching or climbing, and who has experienced the benefit resulting from the consumption of a moderate amount of food in the middle of the day's work, will agree with this conclusion. On the other hand, if a meal is taken when the energy has been depleted and when the body is thoroughly tired out, the digestive process is interfered with, since the necessary energy for assimilating the food is no longer available. In that case, a period of rest for recuperation is necessary in order to enable the individual to benefit by the meal.

Mental work, although it may be as exhausting as physical, probably does not require the same amount of energy as the latter. The tissue waste of an individual who does an hour's hard mental study is certainly not comparable to that which results from an hour's manual labour, and yet the probability is that, although we cannot demonstrate the fact, a certain amount of energy is used up which must be replenished by food. Mental workers, however, can do their work on a proportionately smaller amount of food than physical workers, so long as the diet contains an adequate amount of protein.

The diet most suitable for a sedentary worker is one which is moderately rich in protein, easily digestible, and relatively poor in fats and carbohydrates. A certain amount of unabsorbable residue is desirable in such a diet in order to secure proper elimination of waste products through the bowels. An excess of wheaten foods, particularly of porridge and semi-fluid messes, is to be avoided, and an undue richness in flavouring or in sauces is undesirable. Individuals vary very much in their desire for meat when doing hard mental work. Many prefer to have a full meat diet; others again live on an almost exclusively vegetable diet (though they consume eggs and milk) and say that they feel more satisfied and better able to do their work. The question is probably one of adaptation, and so long as a proper and sufficient amount of food is taken, it does not much matter in what form it is ingested, provided it is prepared in an easily digestible fashion. Mental processes appear to affect digestion to a far greater extent than do physical exercises and manual labour, and it is therefore necessary that the student should pay particular attention to the gastronomic aspects of dietetics. The manual labourer can, to a certain extent, neglect these aspects, but in the case of the mental worker taste and palatability are important factors which cannot be disregarded.

THE INFLUENCE OF CLIMATE.—In hot weather the metabolism of the body is proportionately less active than in cold, and the amount of heat production is

diminished. Conversely, in cold weather, especially when the humidity of the atmosphere is slight, the gaseous exchange is increased, and the tissues require more fuel in order to maintain the temperature of the body above that of the surrounding medium. It follows, therefore, that the diet under the two conditions should be different. In hot weather the object of the diet should be to repair the tissue waste and compensate for the (comparatively small) amount of energy lost in the form of heat. Protein should therefore still form the staple ingredient in the dietary, while the amount of fat and carbohydrate should be cut down and the amount of fluid increased, with, too, a small increase in the amount of salts.

To the average individual the most interesting question with regard to summer diet is the possibility of cooling the body by consuming cold foods and drinks. These act by withdrawing a certain amount of heat from the tissues. For instance, the eating of a water-ice means the expenditure of so much heat used in melting the ice in the mouth and in warming it before it enters the stomach. It is questionable, however, whether this expenditure of heat is not nullified by the subsequent production of heat engendered in the digestion and absorption of cold foods. Ice as an adjunct to the summer diet has been used from the very earliest times. The Persians cooled their delicious sherbets with the snows of Elvend; the ancient Romans served their oysters on slabs of ice, and cooled their wines to a low degree by allowing

them to stand in porous earthenware bottles in a current of air. The desirability of icing certain wines was insisted upon by epicures long before the eating of ices became general, and there is no reason to suppose that the consumption of plain water-ices before or after a meal is harmful. If a cream-ice is consumed, the question of the purity of the milk is of course an important consideration, since freezing by itself is not sufficient to kill deleterious bacteria. The gastronomic objection to the eating of ices applies only when they are taken as a preliminary to, or in the middle of, a dinner, since they are apt to dull the palate to such an extent that the diner loses the fine discrimination of taste and flavour which is so important to the epicure. By the time the ice has passed into the stomach it is practically at the body temperature, unless it has been swallowed without allowing it to melt in the mouth. As a means of cooling the body, water-ices and iced drinks are much overrated. A cool vegetable salad, or a cup of lukewarm tea, partaken without sugar and with a slice of ginger (Javanese) or of lemon (Russian), is much to be preferred. Fruits and vegetables, both raw and cooked, and wherever possible served without sugar or much oil or dressing which contains fat, and a relatively small amount of lean meat or fish, should constitute the main ingredients of the summer diet. Fluids should be partaken of freely, either cold or hot, and the exclusion of soups from the summer menu is undesirable in view of the fact that this is probably

the best way of obtaining liquid nourishment. Vegetable soups and thin broths are particularly excellent. On the other hand, gruels and semi-solid broths, especially when thickened with cream or fatty substances, should be avoided. There are a large number of old-fashioned cold possets, of which the basis is generally some fruit in season, which deserve to be in greater favour than they appear to be as adjuncts to the summer dinner. Curiously enough, the heating value of one of the most popular of summer dishes—salmon and cucumber, with mayonnaise dressing—is relatively high, and from a dietetic point of view this dish, especially as a preliminary to a meat course, should be replaced by some other fish salad.

The main points to be borne in mind in regard to diet in hot weather are moderation in the amount of food eaten, and digestibility of the food itself. Gastro-intestinal disturbances are relatively more frequent in summer than in winter, and the diner should be careful to adapt his meals to his individual requirements and idiosyncrasy. In tropical countries a particular diet is usually adopted, and the European would do well to give it a fair trial before he decides to have his menu composed exclusively of his native dishes. The eating of highly spiced foods in tropical countries has a real dietetic basis, and where such dishes can be tolerated—as they nearly always can when care is taken to serve them with the proper accompaniments of acids or semi-sweet vegetable salads in the shape of sambals or green chutneys—

they will be found to be the most suitable ones that can be devised. One of the reasons for their native popularity is to be found in the fact that a small quantity of a highly spiced curry is generally satisfying. Their use is probably an incentive to moderation, and although their digestibility compares unfavourably with plainer dishes, there are other points in their favour which seem to outweigh this disadvantage. The important point is that they must be well prepared and tastefully served. A badly made chicken curry is an abomination for which there can be no excuse either in winter or summer, and a curry served without its indispensable adjunct, a slightly sweet or semi-acid vegetable, is out of place in a summer menu.

In winter more heat-producing foods are desirable, but at the same time the imperative demand of the tissues for raw material should not be disregarded, and a relatively large amount of protein is necessary. In cold climates the custom of consuming carbohydrate and fat is the result of the experience that these food-stuffs are the most suitable for supplying the body with the requisite amount of potential energy for the production of heat. Metabolism is active, and the tissue waste correspondingly augmented. The diet should be full, in the best sense of the term, to enable the tissues to lay up a reserve stock on which they can draw in case of emergency. Here again the question arises : Is it wise to take in the food at a temperature which exceeds that of the body ? The invariable custom is to neglect cool viands in winter-

time and to rely entirely upon warm dishes. A certain amount of energy is lost in cooling the food, and although this is not by itself sufficient to outweigh the gastronomic considerations which move us to consume smoking hot dishes, it should at least serve as an argument in favour of allowing a greater variety of cold dishes to figure on the winter menu. It is questionable if the artificial raising or lowering of the temperature of ingested food-stuffs has any decided value in regulating the temperature of warm-blooded animals, but such augmentation or diminution is nevertheless of dietetic importance and cannot be entirely overlooked. The important fact to bear in mind is that the heat value of a food depends on its constituents, and that in hot weather the food should be selected from those articles of diet which have a relatively high heat value. The fats and carbohydrates stand high as heat producers, for we no longer hold with Liebig that the proteins alone are energy formers. Vegetables, with the exception of the starchy ones—pre-eminent among which are potatoes, sweet potatoes, and bananas—have a low heat value, and are therefore not suitable as staple articles of winter consumption, but must be combined in the diet with fats and animal proteins. The heat value of a vegetable is considerably raised by preparing it with a butter sauce or by stewing it in combination with fats, and in that form vegetable dishes are very suitable for cold-weather consumption. The main articles of diet in winter will have to be the fats and

carbohydrates, and it is worth while to point out the high value of sugar as a heat producer.

OLD AGE.—When I was a young reporter I had occasion to interview an old gentleman whose age was reputed to be 118 years. He was an apple-cheeked Methuselah, who rambled garrulously on about age-old happenings, but who could not tell me what his regimen had been during the past three years. Yet he insisted upon impressing me with the fact that he could not have attained the rank of a centenarian if he had not “eaten less and drunk more than when I was a young man.” His diet consisted of the equivalent of 5–800 calories, and his toothless condition made it necessary that all his food should be in a state of fine division. He drank two glasses of stout daily and many cups of unsweetened tea, which provided him with probably another 100 calories, and, except for increasing deafness and an occasional cold, he declared himself to be as well as he had ever been.

In advanced age the gaseous exchange and heat production are both decreased, and the total daily metabolism is much diminished. The old man's tissues waste slowly, and the anatomical and physiological alterations which accompany the change from active adult life to the more or less inactive existence of old age favour a decrease of excretion and a general diminution of the processes of oxidation (Van Noorden). Diet in old age must therefore be less in quantity so far as the proximate principles are concerned, and lower in heat value than diet in adult life.

Usually the individual himself, as he approaches this stage of existence, feels the necessity for moderating his diet. His natural appetite grows less in proportion as the body has less need for tissue-repairing material and his capacity to deal with large quantities of food and drink is lowered. He now needs very little building-up material, and rather a spare diet, which helps the system to eliminate the waste products of degeneration. His intake of protein food must be diminished, the amount of water increased, and the quantity of salts and fats decreased. His diet will consist mainly of easily digested carbohydrate, with a small amount of protein material and an equally small amount of fat. Probably at this stage the need for stimulants is a natural one, and should be indulged in moderation, but the main feature of diet in old age is its restriction to a quantity just sufficient to balance output. This is sufficient to preserve the reserve stock which the tissues have laid up, and it is problematical whether overfeeding will increase that reserve, while it is certain that such a surplus intake will throw a great strain on the excretory organs whose capacity to deal with the work is comparatively small. Small and frequent meals, calculated so as to give a low heat value, with plenty of sleep and a certain amount of regular exercise must be the rule in old age. This is not a policy of starvation. The dietician can easily arrange the old man's menu so as to make it varied and appetising without contravening the essential rule of moderation which is so important.

The great apostle of the spare diet in old age is undoubtedly the famous Luigi Cornaro, a noble Venetian who, born in 1464, died 104 years later in a gentle and peaceful manner, "which seemed a passing from the quiet of sleep into the eternal slumber of death." Addison mentions him in the well-known essay in the *Spectator*, and Bacon and Thomas More knew his history. In the Pitti gallery at Florence there is a portrait of the old man, painted by Tintoretto, which reveals him as a hale and alert-looking individual, with a calm and cheerful expression of countenance quite unlike that of the confirmed ascetic. Nor is his life to be regarded as an example of asceticism. In his essay, *The Art of Prolonging Life*, which was written when he was ninety-five years of age, he tells the story of his life and the reasons which prompted him to reform his diet.

In his youth he had always suffered from indifferent health, and when he had reached the age of thirty-five years he was a confirmed valetudinarian. The description of his symptoms shows that he suffered from some abdominal trouble which, nowadays, would most probably be diagnosed as "chronic appendicitis." His doctors regarded his condition as hopeless, but advised a change in diet. Cornaro set himself seriously to study the subject, and drew up a list of the articles of food which disagreed with him. He tells us that he found many things which his palate liked—for example, dry and cold wine, raw fruit and salads, fish, pork, tarts and vegetables, and

thick broths and soups—disagreed with him, and with rare courage and fortitude for a man who had always indulged his palate to the full, he gave them all up and took only such food as he found did not affect his digestion. His main maxim was moderation. “Not to satiate oneself with the food is the science of health,” he wrote, and his vigorous old age proved that his rule was a safe one to follow. His daily consumption was never above 8 ounces of animal food, 4 ounces of vegetables and 14 ounces of wine; when he increased this daily intake by 2 ounces, he declares that he felt the bad effects of this “surfeit” at once. Some of his remarks must be taken with a due allowance of latitude in consideration of the fact that he was in some respects a hypochondriac, but the main lines of regimen that he laid down may advantageously be followed by old men to-day. “As my years multiply I lessen the quantity of my food, since indeed this decrease is absolutely necessary and cannot be avoided. My food is as follows: first, bread, which is always white bread; then a little soup or light broth, with an egg or some other nice little dish of this kind; of meats I eat veal, kid, and mutton, and fowl of all kinds; I eat most salt-water fish and a few fresh-water sorts like the pike. Bread, soups, and eggs are really all that an old man wants. . . . The great rule is to eat slowly, to eat little, and to take care to eat only of that which experience has found agrees with the stomach.”

These rules can hardly be improved upon. At the

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age of seventy, Cornaro sustained a severe accident by the upsetting of his coach. His doctors came with the appropriate contemporary methods of treatment—bleeding, purging, black-draughts and cataplasms, but he refused to be bled or purged, and made an excellent recovery without their aid. From the time that he took to his special regimen his health improved, and, when he had adapted himself thoroughly to his moderate intake of food, he rarely suffered from any slight ailments and never from a serious one.

CHAPTER IV

FASTING AND OVERFEEDING

“Moderation in everything is the great principle in life.”—MULTATULI.

“THERE be two Vices,” remarks Thomas Mouffet in his interesting *Health's Improvement, or Rules for the Preparing of all Sorts of Foods*, a book published in the sixteenth century, “there be two vices, Surfeiting when a Man eateth more than either his Stomach can hold or his Strength digest, and Self-pining, when we eat less than our Nature craveth and is able to overcome.”

These two vices have been handed down to us from the remotest antiquity, and they are still in existence. It is therefore instructive to discuss them both briefly, and to see what lessons their consideration can teach the dietician who endeavours to regulate his life by following the principles of common-sense.

The healthy body requires a certain amount of food, sufficient to make up for the daily loss and to replenish the stock of energy on which the individual draws. The intake of food must be commensurate with the tissue waste, and the ideal diet is one in which, while other factors are not lost sight of, care is taken that the amount of available raw material supplied to

the organism is neither in excess of, nor below, the ordinary requirements of the tissues. When it is in excess the organism is overfed. By overfeeding we mean, therefore, any excess in the intake over and above the normal needs. This is surfeiting and may result, immediately, in a feeling of satiety, followed, if the stomach is not able at once to deal with the food, by an attack of indigestion, and later on by the consumption of increased energy to deal with the waste products of katabolism, by an increase of heat production and of body substance, chiefly in the form of fat or adipose tissue. Nature must either put the surplus intake away in the common storehouse, or treat it as waste material and eliminate it from the system. It is probable that she finds the former method much the more economical, but it is one which can only be followed up to a certain degree. Elimination by excretion throws a strain on certain organs, on the lungs, kidneys, skin, and bowels, on the blood-vessels and glandular system. If these have to deal with an overplus of waste material their functions are liable to become impaired, with consequent deterioration to their structure.

This, then, is the great danger in overfeeding. It throws an immediate strain upon the digestive organs ; it makes an abnormal call upon the resources of the whole body, even when it treats the surplusage in the most economical manner by turning it into fat. Where the individual takes care to help the body processes by indulging in plenty of exercise, the strain is to some

extent diminished, but in that case the term overfeeding hardly applies. Where, however, true overfeeding is habitual, the health of the individual must suffer. It may break down at once, the evidence of such failure to deal with the work being shown in the attack of indigestion that results after a too copious meal, or, more generally, it may fail gradually, the waste products of metabolism being imperfectly eliminated so that a vicious circle is established, with the result that an inevitable impairment of function ensues. Arterial degeneration, kidney and arthritic disease—in fact, all the conditions which we are in the habit of classing together as diseases of degeneration—may follow such overstrain from overfeeding, and, what is more important, the tissues are permanently weakened so that they are less capable of resisting infection.

History has recorded some interesting cases of habitual overfeeders who, notwithstanding the enormous quantities of food that they disposed of, remained, apparently, exceptions to the general rule that overeating predisposes to disease and is not conducive to long life. Milo of Croton, the great athlete, carried an ox round the stadium, killed the animal with a single blow, and consumed the whole carcase at one sitting. Herodotus of Megara, according to Athenæus, habitually ate twenty pounds of beef and the same weight of bread and cheese cakes for dinner, and washed this copious repast down with ten quarts of sweet wine. In comparison with his

digestive energy, the feats of the flute-player, Aglais, who consumed twelve pounds of meat, fourteen pounds of bread, and sixteen quarts of wine for his luncheon; and of Claudius Albinus, whose dessert consisted of five hundred figs, a hundred peaches, ten melons, and twenty pounds of grapes, are insignificant! The Emperor Maximus, renowned for his superb physical strength, drank a bucket of wine and ate forty pounds of meat in a day. Von Værst mentions the case of a soldier in the Guards of Frederick the Great, who was rationed at the rate of twenty pounds of meat per day; while contemporary accounts of the amazing gastronomic exploits of another man of arms are even more startling. This was the grenadier, Joseph Kolliker, who gained a wide notoriety on account of his marvellous appetite. He appears to have been "born hungry," and, when three years of age, was in the habit of completing his meals by swallowing stones. When he entered the army he was reckoned as the equal of eight men by the regimental quartermasters, his average allowance consisting of twenty-five pounds of beef and twenty quarts of wine. A feature of his case was his fondness for ostrich-like delicacies, such as lumps of clay and bits of stone, and his death is supposed to have been due to a bullet impinging upon the mass of stones that lay within his stomach and killing him by the shock of the concussion! A more pathological appetite was that with which the galley prisoner Brazile was cursed. This extraordinary individual, who has the best claim to

the often-abused title, "the human ostrich," had an inordinate fondness for hard things, and was in the habit of finishing his repast by calmly crunching up the china plates and the glass tumblers, and then swallowing the debris and finishing up with the table cloth as dessert, so that in places where his propensities were known the innkeepers preferred to lay out his meals for him on the grass. When he died, the autopsy revealed a strikingly varied assortment of miscellaneous articles in his stomach, among which knife-blades, fish-hooks, bits of lead, and metal buttons figured largely. In 1754 there died at Wittemberg, at the age of eighty, a man who had an equally unenviable notoriety as a great eater of indigestibilities. This was the gardener Kahle, whose first feat was the consumption of a basket of plums, stones, basket and all. He was immensely strong, and could lift a heavily laden table with his teeth, while his appetite was apparently insatiable. On one occasion, when he was left alone in a room, he wandered about eating the leather coverings from the chairs, and ended up by swallowing a lead inkstand and several bundles of quill pens ! His case attracted so much attention that at his death his body was sold to a number of medical men who wished to investigate the condition of his stomach. At the post-mortem examination, however, nothing extraordinary was found ; the lining membrane of the stomach was "slightly injected," but showed no other evidence of the great strain to which it had been subjected

during life. Yet another remarkable case is that of the French soldier who was orderly to Marshal Villars, and who on one occasion easily consumed a whole calf at a sitting.

Nearly all these great eaters lived to attain to a ripe old age, and had the reputation of being strong men in the best sense of the term, never needing medicine, and dying, when their time came, of old age or of accident. In no case is it possible, on the recorded evidence, to ascribe their decease directly to the effects of overeating. They remain as curiosities, exceptions to the rule that excessive indulgence in food is directly harmful to the individual. But it is worth while pointing out that they are pathological curiosities. Their appetites were abnormal, not only in the quantities of food that they consumed, but in the quality as well. Nearly every one possessed a perverted taste, devouring indigestible and flavourless materials as greedily as the best prepared viands. Nowadays such cases would be classed under the heading of vitiated appetites, and the question would arise whether or not there was some taint of insanity in the eaters that accounted for the development of this amazing gluttony.

In dealing with the normal individual, however, these aberrant types may be disregarded. The one guiding line remains—that the intake should be proportionate to the needs of the body. It is impossible in the majority of cases for the individual so to regulate his diet that he can exactly equalise waste

and raw material ; such exact conformation to the rule is only possible in the laboratory. But he possesses tolerably accurate guides in his senses. The old saying that a man should always leave the table with an appetite is a good one, for it recognises the important proviso that the intake should never surpass the powers of the body to deal with it. The moment that the stomach is unable to cope with the consumed food, it gives due warning to the individual. The sense of hunger gives way to the sense of appetite, and this in turn is replaced by a sense of satisfaction. Beyond this stage, when satisfaction gives place to satiety, the careful diner should never go. Indulgence in disregard of the warning which the vagus nerve gives means overfeeding, and the stimulation of the appetite by various condiments, sauces, ices, and similar expedients, means merely the suppression of this warning. It is difficult to define what constitutes gluttony ; the laws of Sulla, Didius, Crassus, Restio, and Lepidus, which made it penal, laid down the rule that gross intemperance in eating and drinking constituted the offence. But the examples already cited show clearly that the limits of normal appetite are very wide, and excess in one person may be parsimony in another. Where a feeling of repletion and somnolence supervenes after a dinner, the diner may know that he has dined too well. His own experience is the best guide in the case, and will furnish him with the best means of avoiding the dangers of overfeeding. It is hardly necessary to lay stress on the importance

of avoiding a heavy meal when tired. On such occasions overfeeding may result from the ingestion of a comparatively light meal, and care should therefore be taken to eat as little as possible. It is much more wise to postpone the meal until the body has had a chance of resting for a short time ; if it is felt that something is imperatively required, the simplest and lightest of foods should be taken, in small quantities, and these must be eaten very slowly, and must be properly masticated so that the digestive fluids of the mouth may have full chance of acting upon them before they enter the stomach. A raw egg beaten up with some sugar and water is probably the best nourishment that a tired individual can take ; it is very easily digested, and is a perfect food for such an occasion. No stimulant is necessary, and the consumption of alcoholic liquids probably does far more harm than good.

The other vice is that of self-pining or underfeeding, which, in its more pronounced form, is fasting or starvation. It is, however, clear that underfeeding, although theoretically a form of starvation, is very often practised by individuals who have no intention whatever of fasting ; in their case the deficiency of raw material is solely due to an improper choice of food. It must be definitely remembered that self-pining or underfeeding is not strictly comparable with temperance or synonymous with the limitation of diet which has been recommended by Hirschfeld, Cogan, Cornaro, and others.

It is in the vast majority of cases an unconscious and involuntary vice, which is found principally among poor people who have not the means to procure articles of food of a proper quality and in adequate quantity.

No one objects to the practice of temperance. Indeed, it is only by exercising a strict moderation in the quantity of the food consumed that the natural enjoyment, without which the best-arranged dinner tastes indifferently, can be maintained. But there is a "moderate and sensible discretion" in honouring the principles of sobriety in diet; if abstention is carried too far, the health of the individual inevitably suffers, for the evil results of self-pining are no less marked than those which follow gluttony. It is true they are sometimes delayed. The human body, as recent experiments have shown, can do with very little nourishment, especially when it is not called upon to do special work. When the time of stress comes, however, the imperfectly nourished organism finds itself unable to respond to the call; it has no stock of reserve energy, and succumbs easily to the invasion of attacking agents. The old physicians were well aware of the danger of exposing feebly nourished individuals to infection. Celsus remarks that no one should enter a house where the pestilence has been unless he has first taken his luncheon. Galen is not content to order the physician to take breakfast—which in general consisted merely of a slice of dry bread soaked in thin wine—before visiting his patients,

but counsels him to take a good meal at which broiled meats must figure, in order to support his strength. The unfortunate prisoners who, under the old regime, were put on a diet utterly insufficient to repair the body waste, fell victims to every attack of gaol fever or epidemic that approached them; the influence of diet upon the incidence of disease in cases of similar epidemics in modern times has been proved on more than one occasion. While temperance and moderation, therefore, are to be encouraged, especially on the part of the diner who desires to appreciate to the full the beauties of a well-ordered, well-cooked dinner, inordinate abstinence or fasting is to be deprecated. There is a real need to lay stress on this point, for of late years an attempt has been made to preach the doctrine of the "spare loaf and the water-jug" in and out of season, and to argue that the best diet is the most limited.

From the earliest times, fasting has been a subject which has attracted the attention of mankind. Instituted principally as a religious observance, it has won a place in the practice of certain nations, and has been invested with a halo of sanctity quite out of proportion to its dietetic value. At the same time there is little doubt that the primary reason for its institution was in many cases a purely dietetic one. The more "cheerful" religions, such as those of the followers of Confucius, of Zoroaster, and of the prophets of savage deities among African and Oriental tribes, do not prescribe fasting; they content themselves with

urging a moderate indulgence in the good things with which nature has provided mankind, and in warning against the evil results likely to follow a gluttonous participation in these benefits. Among the Hindus, fasting, as a religious practice, was limited to the priests and ascetics. Both Charaka and Susrutha, the most ancient writers on medicine among the Hindus, warn against a too frugal and parsimonious diet and make no mention of regular fasting days. The Mosaic canon, so definite on certain niceties of dietetic regimen, prescribed definite fasting days. The Hebrew word for fasting means literally "the affliction of the soul," and one of the best definitions of the term is that given in a religious manual which explains that "fasting is the withholding of all natural food from the body for a determined period voluntarily appointed for moral or religious ends." The curious reader will find much interesting information regarding the custom as it prevailed and still prevails among the Jews, in Nowack's *Hebräische Archäologie* and Montefiore's Hibbert Lectures. Both authorities support the statement that fasting was ordained as a rite of mourning (2 Sam. i. 12), or intercession (2 Sam. xii. 16), or special preparation (Deut. iv. 18, and Dan. ix. 3). The vow made by a woman to fast could, under certain conditions, be cancelled by the husband. The method in which general fasts were kept is described in several parts of Scripture, notably in Jonah iii. 6, 7, and Isa. lviii. 5. A list of the voluntary fast-days observed by the

stricter sects is given at the end of Megellat Ta'anit, where no fewer than forty such fasts are enumerated, nearly all on account of mourning or the celebration of national events. A special fast-day which was regularly observed by the older Jews was on the commemoration day of the destruction of the Temple ; another, observed by the Polish Jews, was on the anniversary of the massacres of 1648. Dispensations were granted to the sick and to pregnant and nursing women, who were, however, required to eat only sufficient food to stay the pangs of hunger. The Jew was obliged by his law to fast before the Pascal supper, and at the Feast of Atonement. As a set-off to these special fasts came the days of feasting and revelry, notably that of Purim, on which it was permissible to indulge in excess. The institution of fasting was probably a wise rule to counteract the dietetic errors which a wandering, nomadic life encouraged. With the Mohammedans fasting (Saum) was ordered during Ramadan and during the Muharren, but was obligatory only from sunrise until sunset—a rule which, it has often been pointed out, puts serious difficulties in the way of the Islamic apostle who desires to convert the Esquimaux ! During the stipulated period, the fast is absolute ; no drink or food must pass the believer's lips, and the strict followers of the prophet abstain even from smoking. After sunset, however, they are free to indulge in both eating and drinking, and anyone who has lived in Mohammedan countries knows how faithfully both

the rule and the privilege are carried out. Mohammed, who remarked that the breath of a fasting man is pleasanter to Allah than the scent of musk, first fixed a special fast-day, termed Ashura, which was identical with the Jewish fast of the Atonement, and only changed it later on to the Ramadan fast which was to be observed daily, from the time when a white thread could be distinguished from a black at the early dawn until the setting of the sun.

Among the Romans and Greeks, fasting was certainly not a religious convention observed by the community. The philosophers and priests fasted as a matter of practice, and the augurs were supposed to fast before making a divination. Certain fast-days were also prescribed for the votaries of special temples, but fasting was not a fashionable subject, and the popular tendency was to go to the other extreme, so much so, indeed, that the Sicilians actually dedicated a temple to "Gluttony." The early Christians attracted attention, among other things, by their fasting. With them it was a sign of mourning and sacrifice—a delicate penance of the flesh, as Luther phrased it. St Augustine of Hippo (*Epistol. ad Januarium* III.) gives particulars of the generally followed custom in his day (395-430 A.D.), from which it appears that fasting was prescribed before partaking of the communion. The councils of Carthage, Auxerre, and Toledo laid down definite rules with regard to fasting before the seventh century, and in England the fasts were prescribed

under encyclicals by Archbishop Egbert and Archbishop Theodore. The early fasting days were Wednesdays—the day on which Christ was betrayed—and Friday—the day on which He suffered—and these days are still observed in the Greek Church. The Western Church, however, changed Wednesday to Saturday afternoon, keeping Friday as a half fast-day, or semi-jejunium, on which abstinence from flesh foods was obligatory from three o'clock in the afternoon. The Catholic Church to-day recognises several kinds of fasts. Abstinence is obligatory on children above the age of seven; fasting on adults above the age of twenty-one years, but not on old people beyond sixty. Sickness, poverty, and hard manual labour are, very naturally, regarded as exempting from these rules. The forty days' fast at Lent is practically the only prolonged fast prescribed by the Western Church. The Greek Church, on the other hand, has four great fasting periods—the feast of St Philip the Apostle, from the 15th of November until the 24th of December; the forty days' fast at Lent time; St Paul's fast from the Monday after Trinity until the 29th of June; and, finally, the fast of the Divine Mother, from the 1st until the 14th of August. The Friday and Wednesday fasts are kept as in the West, except when Christmas Day falls on either of these days.

From these rules certain persons may obtain dispensations on application to their bishop. The dispensation may give them the liberty of omitting

the fast entirely or of eating flesh foods on fasting days. There has always been some doubt with regard to what are and what are not "meats" in the sense of the canons. One of the popes was much agitated on the question of bacon, and refused to lay down a definite rule whether or not it could be eaten. This was Zacharias, who, in reply to a letter from St Boniface, wrote back : " I really don't know. You must use your own discretion, and, if you have any doubt in your mind, abstain from it !"—a sensible reply which must have given great satisfaction to a host of gourmands at the time. Game was admittedly forbidden. Legend relates that St Aldobrand, on finding a roast pheasant at table on a fast-day, promptly revived the bird and made it fly off the dish. Certain monastic orders have always had much stricter rules with regard to fasting. Thus, the Carthusians are not allowed to eat meat at any time, and practise abstinence from fleshy food from the time they join the Order until their death. Apart from religious convention, fasting has rarely been prescribed on a large scale. The fasts indulged in by the Flagellants were the direct result of religious enthusiasm, and, for fasting as an experimental or dietetic fad, we have to search modern literature to find examples. It is true, ancient writers give many instances of wonderful powers of abstinence possessed by certain individuals, but there is no evidence that these observations were truthfully recorded. We are told that St John of Matha fasted when he was an

infant in arms, by abstaining from his mother's milk on Fridays, and Sozomanes mentions the case of a monk who fasted for sixty days until his teeth dropped out. These are legendary examples which need not detain us long from the consideration of the undoubtedly authentic cases of prolonged abstinence from food which have been recorded in modern days. The fast of Dr Henry Tanner of New York, who, for a bet, remained without food from the 28th of June until the 7th of August, 1880, was repeated several times, and was carefully investigated by his professional colleagues. The Italian, Succi, fasted from the 18th of August until the 17th of September at Milan, drinking only water flavoured with opium extract, and displaying remarkable energy and vigour at the end of his trial, in striking contrast to Tanner, whose emaciation and lassitude were both pronounced at the end of his fast. An even more striking case was that of the young Italian painter, Merlatti, who fasted at Paris for fifty days, drinking only water and smoking several cigars a day. At the end of this period he was a physical and mental wreck, unable to stand, extremely emaciated, and so weak that he could not digest the lightest food. His health suffered markedly under the experiments, and it was months before he could take an ordinary meal. When he attempted to repeat the experiment a year later, he died suddenly during the first week.

Experience during the Great War has taught us much about underfeeding, both of individuals and of

communities. So far as the individual is concerned, the records of prolonged fasting have been beaten by new records, which show that a moderately well-fleshed man can bear deprivation of solid food for much longer periods than was formerly thought possible except in individuals who have consistently practised fasting. Experience has shown, too, that the loss of body substance engendered by fasting can very quickly be repaired by appropriate diet. Lusk, in *The Science of Nutrition*, published in 1921, has fully examined the subject of underfeeding, and du Bois, in a later work, has amplified his data by further experimental research. Our knowledge has been much increased by the study of large groups of individuals who for prolonged periods have been subject to imperfect and inadequate diets, owing to the deprivation of essential food-stuffs. One important fact we have gleaned from such study is that Nature does her best to compensate for underfeeding by husbanding the resources of the tissues. The underfed pregnant woman, for instance, provided she is healthy, gives to the unborn child as much nourishment as possible, even at the expense of her own tissues. Careful study has shown that the average weight of newly born babies in a community greatly undernourished does not differ markedly from the weight of those born in better-fed communities. But there can be no question that from the moment when the individual has to rely on his own unaided powers of assimilation, any underfeeding, in however small

a degree, invariably handicaps him. When that individual is an infant, who above all needs proper food for the nourishment of his nervous system, physical and mental retardation inevitably follows such underfeeding. After a year, when the nervous system has developed sufficiently to take care of itself, the effects of underfeeding are usually more physical than mental, but up to the time when growth has stopped, when the skeleton has become ossified and the muscular tissues have developed to their full extent—which in a normal adult can be fixed at any time between the twenty-fifth and the thirtieth year—underfeeding is still a serious interference with the metabolism of the body that can result in grave physical disturbance. All over the world, in both civilised and uncivilised countries, the effects of such underfeeding can be observed in the juvenile population. The most serious and most common defect that medical inspectors of schools have to report is always malnutrition, that may be caused by wrong or improper feeding or, on occasion, by real deprivation of food in the sense that the children do not get enough to eat to replenish their natural and normal tissue waste. Much is being done to counteract such habitual underfeeding, and already great improvement is to be seen in communities that insist on proper school meals and an adequate dietary for both day and board scholars, but much more may be done by studying the food requirements of the community and by insisting upon proper methods of food

preparation and upon food-stuffs that contain the essential requirements of the growing young organism.

For ordinary purposes fasting may be considered under two heads: acute starvation and chronic starvation—or, as it is more generally called, inanition. The latter is merely a symptom of a pathological condition which is seen in wasting diseases, in fevers, in certain forms of hysteria, and in disorders of the digestive system, and need not detain us here, since its consideration is more properly relegated to the text-books of medicine. The acute form of starvation, however, is worth consideration, since fasting, no matter in how minor a degree, is, after all, merely a variant of it. A great deal of experimental work has been done of late years by scientists to determine exactly the processes which go on when an animal is subjected to starvation by cutting off the whole, or a part, of its food. Kehmann and Muller, for instance, have kept accurate records of the fasts undergone by the well-known fasting men, Cetti and Breithaupt, and Luciani published an interesting monograph on the whole subject, in which all the findings have been summarised.

During fasting certain changes in the body metabolism are observed.

The individual practically uses up the same amount of food as it has been accustomed to consume during ordinary life. The only difference is that this food is not replaced. The individual lives, as Van Noorden phrases it, thriftlessly at the expense of its own tissues.

Ranke found that a fasting man consumed 2320 calories in a day, whereas the same individual, upon a normal diet, only used up 40 additional calories during a similar period. Succi used 22 to 25 calories per kilogram of body-weight, and it has been found that the same rule holds good in hibernating animals and in patients who are in a cataleptic or hysterical sleep, the average expenditure of energy during the process of fasting diminishing with the body-weight at the rate of 30 to 32 calories per kilogram (Van Noorden). This energy comes solely from the protein and fat of the body tissues.

We are here only interested in the effect of moderate fasting upon the normal individual, and it may be clearly stated that under very few conditions is fasting, as a habit, advisable in persons who normally practise moderation in diet. The good results that follow a course of fasting, about which so much has often been written, are in the main experienced by those who have been intemperate in their feeding, and to whom any change of diet is desirable in order to relax the strain which habitual overfeeding, or improper feeding, has thrown upon their organs of assimilation. On the other hand, there is ample proof that stinting may lead to grave damage to health. Over and over again the fallacy of the spare diet has been demonstrated. Caspari's vegetarian enthusiast wasted persistently, although he maintained his strength and said that he was enjoying his life. The experiments of Neumann and Chittenden have

tended to make physiologists modify their estimates of the amount of food required, but even when we admit that most of us consume far more than we require, we need not be forced to accept the dictum that it is necessary to consume less than the satisfaction of healthy appetite demands.

We may therefore dismiss absolute starvation as something with which the dietician, who is imbued with common-sense, has nothing to do. The important fact remains that the experience of moderate eaters has conclusively shown that the average human being can subsist on much less food than is popularly supposed. But this fact again brings us to the one main principle of dietetics—that the intake of food should be regulated not by arbitrary rule, but by the special requirements of the individual. As Hippocrates remarks: “A thin and precise diet ought not to be prescribed to anyone in indifferent health nor scarce to any who is weak. . . . The quantity of meals ought to be appointed not by weight, number, or measure, but by sense, and by the ability of the stomach to deal with the food.”

CHAPTER V

DIET FADS AND FALLACIES

“There are some that go to extremes in the matter of diet. Take care that they lead you not away from soberness nor tempt you to undue austerity.”—DR MOUFFET.

THERE is perhaps no subject upon which there is greater diversity of opinion than that of diet, none on which the faddist, with persistent disregard of fact, lays down the law with such authoritative reiteration that it presupposes the possession of catholic infallibility. The diet faddist is an annoying and irritating being to the student of dietetics. Of late years his class has multiplied out of all proportion to the benefits which he confers on the race, and he has attained to corporate dignity. Formerly he ramped alone, like the lion of Scotland in its counterfleury, but now he is banded into societies, and has become gregarious. He appears in various forms and disguises. The one variety sedulously avoids carbohydrate food. The other speaks learnedly of “purin-free basis,” and makes balderdash of the simplest menu by inverting the most ordinary principles of physiological chemistry. This one is a nutarian; that one a fruitarian; his brother on the other

side boasts himself a vegetarian ; this is a meat man ; this a sour-milk votary ; and as an addendum we have a whole host of varieties, ranging from the grape-eating enthusiast to that incomprehensible being who abhors asparagus and imagines that mankind can only exist happily if it never cooks its food. Everyone has his reason for the particular fad that he cherishes. He hates nothing so much as to be told his errors. He dislikes nothing worse than to be "made a fool of." It is useless to quote authorities to him ; he will retort by quoting opposites. Usually he has a smattering of science, just as the "authorities" who write for his special delectation, and having gained a certain acquaintance with physiological and biological theories, he becomes an expert at misapplying facts. The faddist, unfortunately, is not confined to the layman ; he flourishes in the profession of medicine as vigorously as outside it. It is true medical diet faddists are not very numerous, and are limited to the extreme temperance men whose enthusiasm has run away with their logical faculties ; to the exponents of some particular theory of diet in relation to disease ; or to the upholders of old-fashioned ideas with regard to diet in special forms of treatment, but their very existence is a support and encouragement to the lay faddist.

There is nothing new under the sun, and the diet faddist is as old as the cookery books. Polybius warns against the pernicious habit of

drinking boiled water. Triptolemus, who ought to be canonised by all vegetarians, proclaimed a law making it penal for any of his subjects to eat meat; Celsus deemed broiled beef harmful to the healthy stomach, and Avicenna advises that a child should not be allowed to touch leeks! Helvetius devoted much attention to proving that man was purely carnivorous; Rousseau to demonstrating the reverse. Gassendi, a sickly valetudinarian all his life, inveighed strongly against meat, and protested that his ills were due to the fact that his parents had been meat-eaters; while Gall tore the human brain to shreds to show that mankind was omnivorous, because the cerebral convolutions were arranged in a certain order.

The true student of dietetics will not need to be told that there is no absolute rule in his science. The only guiding line in diet is the safe *via media* mapped out by common-sense and a study of individual taste and idiosyncrasy. Physiologists are well aware of the fact that taste and appetite are not pathological curiosities, but normal factors in determining the value of a particular dietary. Where a special taste exists, the onus of proof is on the objector to show that indulgence would be detrimental to the organism. In matters of diet, scientific regulation is a grand thing, but it should go hand in hand with common-sense and a careful study of the temperament and liking of the individual. No one can lay down rules for the diet

of any person until he has profoundly studied the influence of various articles of diet upon the health of such a person, until, in fact, he knows that person's dietetic idiosyncrasies. Ordinarily only the individual can undertake such a close study, and the saying that "If a man at forty has not found out what agrees and what disagrees with him, no one in the world can make him any wiser than he is," has a germ of truth in it, sufficient at least to demonstrate the fact that generalisations are unwise and fads worse.

What, then, is dietetic idiosyncrasy? It is only of late years that this important subject has been studied with the care and attention it deserves, and it is noteworthy that the best writers on taste—as, for instance, Brillat-Savarin and Carême—have considered the subject in some detail in their writings. Plainly put, idiosyncrasy may be defined as the factor that changes one man's meat into another man's poison. What that factor is we do not yet understand. We talk learnedly of anaphylaxis and alterations in the specific gravity of the blood, but we do not yet know why one person can eat lobster-salad with impunity while the slightest indulgence in that dainty by another causes a generalised skin rash that has on occasions been mistaken for scarlet fever! The man who runs amuck on diet fads is sublimely unconscious of the fact that such a factor exists. He still argues that because this or that diet has been found excellent

in this or that case it must necessarily be suitable for all individuals.

That certain foods affect certain individuals in a manner entirely different from the way they affect others is an old observation, on which all writers of dietetics have laid stress, attempting to explain it in some semi-scientific or fanciful manner. The Indian Vedas, which give most elaborate dietetic rules, state that foods are only to be given at certain seasons and to certain persons, while at other seasons and to other individuals their administration is fraught with danger. The Salernitan authorities gave instances of peculiar dietetic idiosyncrasies, and other writers have described their own individual cases. In one person the eating of parsnips produced, habitually, a violent colic, attended with acute distension of the abdomen ; rashes following the eating of common articles of food like Stilton cheese, scrambled eggs, and pea-soup have been recorded. Where such idiosyncrasies are known, they rarely lead to mistakes in diagnosis, but their presence is sometimes unsuspected, especially when the symptoms follow the consumption of a new article of diet which the individual has not yet had an opportunity of trying. Idiosyncrasy may show itself in many other ways, the most common of which is perhaps the digestibility of certain foods. The table of normal digestibility and food values is merely relative ; it is never absolute, for the digestibility of a certain article of diet depends largely on idiosyncrasy. Some people, for example,

find it very difficult to digest milk ; others cannot digest vegetable foods as easily as meats.

The food faddist invariably neglects to take into consideration this important factor in diet. He generalises from the concrete to the abstract. He assumes that because a certain arrangement of diet is good in one case it must necessarily be good in every case. He draws analogies from false facts, and distorts statistics in order to make capital for his case.

Nevertheless he has done a great deal of good by directing attention to certain essentials of dietetics which were in danger of being overlooked or at least imperfectly considered. For that the thanks of everyone who is "studiously mindful of his belly" are due to him. At the same time he has been instrumental in shaping the fashion for a variety of extraordinary, and fortunately, in the majority of cases, ephemeral vagaries of diet which have not been beneficial to the health of the community. A typical example is the "sour-milk diet," which owed some of its fashionable popularity to the misdirected energies of medical men who saw in the new food a panacea for all human ills. We now know that sour milk is by no means the harmless, life-prolonging beverage which it was vaunted to be, and the craze for it has died out, though many who knew its merit long before the fashion found it out have continued to keep it in the place where, many hundreds of years ago, Avicenna set his diet of curds and whey. The

danger of diet fads is always that they tend to shake the public confidence in a food which is undoubtedly of immense utility, but which, suddenly elevated into an elixir and as suddenly attacked, as all things are by those who wish to present the other side of the case, falls into partial oblivion until it is resurrected to serve the ends of another section of faddists. Every diet fad of to-day had its beginnings in the primeval period of diet reform, when the Chinese physicians tabulated the uses of foods and the Egyptian priests prescribed their temple dietaries. The paucity of human invention shows itself nowhere so strikingly as in these modern attempts to establish new religions in diet on the foundations laid by the ancients.

Undoubtedly the most common diet fad is vegetarianism. The true vegetarian is relatively rare, for, in order to be faithful to his tenets, he must abstain from practically three-fourths of the main articles of diet with which civilisation is acquainted. Everything that is of animal nature must be rejected; eggs, milk, cheese; jellies made of animal gelatine must be eliminated. As a result of the sternness of the true vegetarian code, minor sects have arisen which, while styling themselves vegetarians, are really omnivores, who consume everything that is not strictly speaking "meat." These minor sects have a more logical standpoint than the true humanitarian who refrains from animal food on the ground that the consumption of such

food is an immorality, but in both cases the supporting dogmas are based on scientific fallacies which are easily demonstrable.

We are not here concerned with the humanitarian or ethical argument. Every diner must decide these nice points of morality, in regard to what he eats, for himself. It is conceivable that a man may abstain from *pâté de foie gras*, however much he loves that dish, simply on the ground that its preparation presupposes an amount of cruelty and suffering which is morally indefensible; it is equally logical that a member of the Society for the Prevention of Cruelty to Animals should refuse to taste grilled lobster. With such reasoning the gastro-soph has nothing to do. But when it comes to a direct allegation that the livers of Strasburg geese, prepared in a certain way, are unfit for human consumption because they do not fulfil certain arbitrary conditions laid down by the faddists, the dietician is in a position to test the question by referring it to the court of common-sense. It is in that court alone that the diet faddist and his dogmas must be tried, and, when that is done, it will generally be found that his case breaks down because it is not founded on true dietetic principles.

Vegetarianism is no new cult. It flourished among the Egyptians, in the East, and reached its apotheosis among the Hindus, whose religious principles prohibited the taking of animal life. Various tribes still subsist on a diet in which veget-

ables predominate, though it is rare to find a group of aboriginals who depend entirely on vegetable food to the exclusion of milk and cheese, or what may be termed "animal by-products." On the other hand, the history of dietetics, from the earliest times, gives numerous examples of individuals who have led a very abstemious life and have conformed strictly to the tenets of the true vegetarian school.

These apostles of the cult have been the proselyting factors, for they have stated their case with a great deal of ability, and have had the support of exemplary lives which, by strict moderation and attention to the essentials of health, have been prolonged beyond the average span of human existence. They have made no far-fetched claims, but have rested their case, in the main, on individual results, strengthened here and there by an appeal to science and to the statistics of disease. Let us see what their case holds.

A glance at the anatomy of the human being will show that Nature has meant him to be an omnivore. His dentition is not that of a simple vegetable-eating animal like a rodent; he possesses canine or fang teeth, and has a strongly developed jaw, moved by very powerful muscles and adapted for the mastication of fleshy foods. His digestive apparatus is not like that of an animal destined to feed on vegetables only. The comparatively small stomach, the large area occupied by the digestive glands such as the pancreas, and the elaborate pro-

vision made in his intestines for dealing with animal fats and proteins, are all anatomical points which the strict vegetarian will find hard to overcome.

The whole question centres round the problem of Exclusive versus Mixed Diet, and there is no doubt that the weight of evidence is against the vegetarian's claim. Erasmus Darwin was one of the earliest English writers to point out the advantages of a mixed dietary. Hunter, Haller, Blumenbach, and other eminent physicians supported the arguments in its favour. On the other hand, the experts who have voted for an exclusively vegetarian dietary have been few, and, with the exception of Cocchi and Wallis, their claim to be considered as authorities may safely be disregarded. Against them we may also put the meat faddists like Helvetius, Arbuthnot, and Bianchi, who clamoured for a purely animal diet. Exclusive diets of any sort are, in the long run, detrimental to health, as the experiments of Hirschfeld, Stark, Hammond, and Luciani have shown. In some parts of the world the natives adopt an almost exclusively protein diet, with generally beneficial results; but in the majority of cases this is done as a matter of necessity, not of choice. The argument that the anthropoid apes subsist on vegetables alone is quite fallacious. Most of the quadrumana eat animal food when they can obtain it, and a chimpanzee has been known to be as fond of its breakfast of ham and eggs as any civilised Cockney, while menagerie-keepers are fully aware

of the importance of giving the smaller monkeys a course of insect food occasionally. It has been clearly demonstrated that the best results, so far as man is concerned, are obtained on a mixed diet. It is true we live largely upon meat and neglect our choice assortment of vegetables, chiefly because we do not know the best and most economical ways of serving them; but it would be a false argument to conclude from this fact that we ought to discard meat entirely and stick to a purely vegetable diet. As a matter of fact, the number of true vegetarians is very small. The ordinary vegetarian is a mixed eater just as much as the ordinary meat-eater. From the earliest times mankind has grasped the importance of combination in dietetics. The habit of eating butter with bread, vegetables or bread with meat, "lean" cheese with matured cheese (as is done in some parts of Sicily), of making vegetable salads with oil, and stewing vegetables with meat is an example of this fact.

The vegetarian points with great satisfaction to the fact that in general the change from animal to purely vegetable diet is followed by an increased feeling of energy on the part of the individual, and draws from this the conclusion that a vegetable diet is more healthy. As a matter of fact, a change of diet in any circumstances, especially in the case of one who has overloaded his system by too great indulgence in fleshy foods, is followed by a similar feeling of exhilaration. It is merely the result of the

initial pause which the tissues make in order to adapt themselves to the new conditions. There is usually a slight decrease in the body-weight immediately after adopting a vegetable diet; for a few days at least, the organism is fasting, and living on its own tissues before it accommodates itself to the change of diet. The beneficial effects of moderate degrees of fasting have already been referred to, and it is quite possible that the equally beneficial effects of a vegetable diet, at the commencement at least, are due to the same factors. But there still remains the question whether these effects are permanent. The experience of unprejudiced persons, who have tried both kinds of diet, does not support the claims of the vegetarians that abstention from flesh foods is the simplest way of ensuring a healthy energy. The omnivorous eater, indeed, is often struck with the lassitude and want of energy shown by those who are in the habit of frequenting vegetarian restaurants, and the average individual certainly finds that he does better on a mixed diet than on a purely vegetable one. At the same time, there is no doubt that inordinate indulgence in animal food throws a great strain on the excreting organs of the body. The *via media* here, as all through dietetics, is a sane moderation, with variety and a careful selection of diet to suit the tastes and idiosyncrasies of the individual. The argument that a vegetable diet is a panacea for all the ills that result from indiscretions in diet is fallacious, and a vegetarian may, and

very often does, commit as many errors in diet as an omnivorous eater.

Another plea advanced by the vegetarian is that his diet is a prophylactic against various diseases of obscure origin, such as cancer, appendicitis, and rheumatism. This allegation is totally unsupported by facts that can be accepted as reliable. One of the theories for the increased prevalence of appendicitis is the consumption of indigestible wheaten foods; another is the eating of bread which has been milled by metallic rollers. It need scarcely be said that both theories, like the hundred-and-one odd others which have been gravely produced by the imagination of scientists who deem it absolutely necessary to account for everything that happens, are quite unproved, but they may be mentioned as showing that there exist reasons for denying the claim that a purely vegetable diet is a safeguard against the disease. Similarly the statistics with regard to the incidence of cancer do not support these claims. Cancer is found among tribes that live largely on vegetable diet, and has been met with in patients who for many years have been exclusively vegetarian. One may go further and carry the war into the enemy's camp by pointing out that there are certain diseases which have been found particularly frequently among vegetarians. Among these may be mentioned mucous colitis, the beri-beri that is supposed to be due to the eating of contaminated rice, and pellagra, caused, probably, by the consumption of fermented maize.

In all these cases, however, the argument cannot be pressed home, for the theories of causation of these diseases are yet unproved, and it is probable that further research will show that such disorders, now thought to be due to diet, are in reality specific diseases caused by want of definite vitamins in the diet. The contention that the meat-eater runs the risk of consuming food contaminated with parasites which cause dangerous diseases—trichinosis, for example—is paralleled by the accusation that vegetables alone are responsible for equally grave conditions—such as sporotrichosis and tapeworm.

Much more worthy of consideration is the vegetarian's claim that his diet is an ideal one from the standpoint of pure dietetics. He bases this claim on the fact that certain vegetables undoubtedly contain all the proximate principles which are necessary in a true food, that they are in general far cheaper than fleshy foods, and that their nutritive value is higher, pound for pound, than their rivals the meat foods. This is, however, true only to a certain extent. A pound of lentils contains more nourishment theoretically than a pound of meat, because the relative amount of protein is larger and because the lentils are concentrated. A pound of dried meat, deprived of its water in the same way as the lentils, contains half as much protein again as the latter. But it is an undisputed fact that a large part of the protein in a pound of lentils passes out of the body in an undigested state. The digestibility of a pound of

meat is plus, that of a pound of lentils minus, to put it simply. To a certain extent the vegetable foods, especially the leguminous foods, may be rendered more digestible by proper cooking, but even then they compare unfavourably with the best forms of animal foods. Nuts and vegetable seeds, the nutritive value of which is theoretically very high, are even more indigestible and compare still less favourably. The sappy vegetables, on the other hand, contain very little that is of nutritive value, and by themselves cannot be considered as true foods. The cellulose which is so plentiful in them is quite indigestible and passes out of the body unchanged.

While vegetables, as adjuncts to fleshy foods, deserve to be more carefully considered than they have hitherto been, it is clear that a purely vegetable diet is not desirable for one who, following Walker's dictum, knows how to dine so as to preserve the maximum enjoyment with the greatest advantage to health. A great factor in the popularity of any diet or food is its attractiveness, and, moreover, the satisfaction that it gives to the individual. A vegetable diet to the majority of diners is insipid unless it is prepared in a very careful and elaborate manner. On the Continent and in America, vegetarian restaurants have fully appreciated the desirability of making their menus as varied and as attractive as possible; in England, unfortunately, there are few vegetarian eating-houses that can compare with

even an ordinary chop-house or inn so far as the preparation and blending of the food are concerned. The skilfully combined vegetable soups, of which the basis is a milk stock, and in the composition of which wine and currants enter, are rarely obtainable in England, though they figure largely on the bill of fare in the well-known and very excellent vegetarian restaurants at Rotterdam and Cologne. The *consommés* prepared from marmite or yeast extract, which appear to be the staple stand-by of the English vegetarian cook, are abominable makeshifts. In general, the vegetarian aims at giving to his purely vegetable dishes the form, taste, and qualities of some meat dish. He feels the necessity for imitation, and cajoles himself into the belief that a diner who has tasted the real article will be satisfied with the forgery. That is a mistake which ought to be rectified as soon as possible if vegetarian restaurants desire to achieve any reputation as eating-houses. They should strive to furnish the public with vegetables cooked in the best and simplest forms, so as to retain the flavour and preserve the delicacy which is so highly cherished by the true gastroph, instead of smothering the dishes in imitation sauces which only serve to disguise indifferent cooking. One of the most difficult things to obtain in an average English vegetarian restaurant is salad. The crisp lettuce, well dried, with plenty of good oil and the best of vinegar, is a rarity which does not figure on the menu. Instead of these the

diner is bidden to partake of crudely combined "fruit and vegetable salads," manufactured apparently under the impression that mayonnaise and an assortment of cooked vegetables and uncooked nuts can supply the deficiency. Vegetable cookery, to be worthy of the name, should endeavour to exhibit the food in the least disguised and simplest manner. The essence of success here, as elsewhere, is care, and, where sauces are used, the greatest skill in blending flavours—an art of which the vegetarian cook understands next to nothing. By developing this side of culinary science the vegetarian can do a national service in showing the ordinary cook how to serve up vegetables, but apparently as yet he has attempted merely to cater to the crude and immature tastes of the average faddist who frequents his restaurants. The range of variety that he has to choose from is very wide, and it would be well, too, if he studied the old cookery books and resurrected the vegetable dishes that were in vogue among the Italians at the time of the Medici and became acquainted with the sterling merits of olive oil as a medium for frying a vegetable frittura.

The fruitarian faddist is a variant of the vegetarian. His diet is a very agreeable one, especially in warm climates, and is particularly adapted for a trial in summer-time, but as a general all-the-year-round diet it is open to grave objection. It is true the amount of sugar that it contains is sufficient, provided such fruits as dates, raisins, preserved plums, and figs are eaten, to give the heat required during a cold day, but

carbohydrate alone as a source of heat in diet is objectionable on account of the additional energy expended by the tissues to convert it. A certain proportion of animal or vegetable fat is necessary, and, when this is combined with a fruit diet, the digestion nearly always suffers as a result. The energy value of a fruit diet is unquestionably superior to that of a purely vegetable diet, and, when carefully prepared, fruits are most wholesome and digestible, while their vitamin content is high. Against this, however, must be put the fact that the average individual very soon tires of a carbohydrate diet; of all tastes that to which the palate most quickly becomes accustomed is undoubtedly sugar. In certain conditions a fruit diet is specially indicated, and the sedentary worker—the busy city man, for instance—will do well to pay some attention to the matter and make a trial of a simple fruit lunch at midday in summer-time. The results will show that there is enough energy-giving value in such a simple feed, and as a variant to the usual luncheon it has undoubted merit. A bunch of well-selected Malaga raisins and a small tumbler of milk make an ideal luncheon which possesses all the requirements necessary for repairing the body waste, and are an excellent change from a ham-sandwich and a glass of beer, which contain approximately the same amount of nutritive material.

The enthusiast who only eats uncooked food scarcely needs comment in a work on dietetics in which the importance and desirability of properly

preparing food for human consumption have been impressed upon the reader. Most articles of diet gain in value by cooking. Not only are they rendered more digestible in some way, but they are robbed of deleterious properties and rendered attractive and appetising. The *sine qua non* is of course that the cooking must be done with care, judiciously and skilfully, so as not to impair the nutritive value of the food and not to detract from its flavour. The raw-food faddist has therefore only a restricted dietary, and cannot claim to be regarded as a gastrosoph even by courtesy.

The faddist who maintains that we should drink only distilled water and abstain from salt, founds his case on the argument that calcareous degeneration of the blood-vessels is very common in middle life, and that distilled water is a powerful solvent. We know comparatively little regarding the causation of arterial degeneration, certainly not enough to dogmatise in this extreme fashion, but what we do know is that the tissues of the body demand for their due nutrition certain inorganic salts which must be gained somehow. Distilled water, as has already been said, is a strong solvent. If the amount of inorganic salt contained in the food is insufficient and the individual only consumes distilled water, the odds are that his health will suffer, since the tissue salts are dissolved by the water and excreted before they can be assimilated. As a special adjunct to diet in certain conditions distilled water has undoubted uses, but it is an insipid

drink which needs a great deal of self-sacrifice and fortitude on the part of the individual before a taste for it is acquired. To say that it should be regarded as the habitual and only beverage of mankind is to lose sight entirely of the fact that Nature has not made it possible for an animal to obtain such a drink. Distilled water is as much a product of civilisation as alcohol.

Certain individuals are in the habit of taking only two meals a day, one at midday and the other in the late afternoon or early evening, and abstain altogether from breakfast. They argue that during sleep there is relatively little waste of the tissues, while digestion proceeds very slowly. A dinner eaten late at night, for example, is not properly digested when the time arrives for breakfast; any further consumption of food at this stage is therefore merely overloading the system and throwing a strain on the assimilative organs. On the other hand, the average individual feels that he wants a fairly solid meal with which to start work. The matter is one which must be decided by individual opinion. If a person feels that he does not need breakfast; if he has no appetite for this meal, and remains perfectly fit and able to do his work from the time that he rises in the morning until he takes his first meal in the middle of the day, he may safely indulge in this habit, provided that he does not lose weight. In the majority of cases he will probably find that this slight fasting is beneficial to his health, and, so long as his constitution does not suffer by it,

he may continue the habit. Even in such cases, however, the consumption of a dry biscuit, of a glass of water, or of fruit early in the morning, is advisable. Weak individuals, who are naturally spare and whose digestion does not brook full meals at regular intervals, will probably find that they will derive much more benefit by sticking to the customary three meals, and cutting down their intake at each to suit their requirements. Such individuals must guard against the depressing effects of comparatively long periods of abstinence. Again, full-bodied persons with a tendency towards *embonpoint* will have to exercise great care in altering their diet. Abstinence in order to get rid of superfluous adipose tissue should only be resorted to on medical advice, and amateur experiments in such a condition are often the source of permanent injury to health.

There is another school of faddists whose motto is "Eat when you feel hungry!" They are opposed to regularity in meals, holding that the call of nature is the satisfactory guide for the individual. The obvious objection to their scheme is the fact that modern civilisation has to some extent altered our tastes and inclinations. In a state of "naturalness" hunger and appetite are undoubtedly safe guides, but the practice of conforming solely to inclination is, to say the least, an inconvenient one. Regularity in the taking of meals is to be commended on many grounds, but the student of dietetics will not need to be told that appetite and the feeling of hunger are factors to

be taken into account as well. With the due distribution of meals, the average individual finds that his natural inclinations are perfectly well satisfied, and if in addition he takes care to observe the precautions which are imperative for the due preservation of health—not to eat to repletion, not to eat when appetite no longer prompts the consumption of food, and to exercise a sane and discriminating moderation—he will not need to follow the irregular meal faddist and nibble at something all day long.

One or two other diet fallacies may be here referred to. It is a popular presupposition that brain workers need a large amount of phosphorus. The patentees of proprietary foods lay stress on this point, and from time to time a revival of fish eating has been due to the allegation that fish diet is the ideal for the brain worker. The theory, popularly, is that fish contains a relatively large amount of phosphatic salts, and since phosphorus is a brain stimulant, it must be a good thing for the literary man or the student to consume fish. Both conclusions are fallacious. There is no proof whatever that a brain worker requires more phosphorus than a farm labourer, nor that the phosphorus in patent foods is taken up by the organism with special and direct benefit to his mental faculties. There is no food that can be considered a "brain food," and the amount of phosphorus contained in fish is therefore no special argument in favour of fish being the ideal food for the brain worker. Fish is an economical and nutritious article of food, and as such

it is deserving of the highest popularity, but as a brain food it has no special value.

Another fallacy is that concentrated foods are preferable to ordinary foods, and that predigested foods have a far higher nutritive value than well-prepared ordinary dishes. No doubt such concentrated food is easily and quickly assimilated, but, as has already been said in a previous chapter, the nutritive value of a food depends on the need of the tissues and the absorbability of the food. If the food is given in too strongly concentrated a form, part of it is excreted almost at once, and such excretion throws an additional strain on the body and wastes energy. Another point of importance is the value of the food to satisfy the appetite. When food in tablet form is consumed, in small quantities and in a highly concentrated form, the appetite is hardly ever satisfied and claims more nourishment. Concentrated food is a valuable adjunct to a dietary, especially in cases of weakness and debility, but is not to be advised in the case of an ordinary healthy individual who is able to deal with a moderate meal.

The purin-free faddist is a variant of the vegetarian school who affects a great horror of the dangers that are liable to follow the ingestion of purin bases. Purin bases are decomposition products obtained from nucleo-proteins by the action of ferments and various chemicals, and are allied to uric acid. The nucleins, from which these bases are formed, are found in the nuclei of animal and vegetable cells, and a published

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work on the subject tends to prove that one of the ways in which uric acid may possibly be formed in the organism is by the oxidation of this nuclein in the cells. The purin-free diet faddist therefore argues that food-stuffs containing purin bases must not be eaten, and that we must live on a purely purin-free diet. The following table, from Miss Williamson's statistics in Van Noorden's monumental system, gives the average purin content in grammes per kilogram for various common food-stuffs :—

Cod, 0.50	Plaice, 0.70	Salmon, 1.10	
Beef, 1.10	Ham, 1.10	Chicken, 1.20	Mutton, 0.96
Potatoes, 0.02	Oatmeal, 0.56	Haricots, 0.63	Peas, 0.38
Tea, 1.20	Lager beer, 0.12	Cocoa, 1.0	

An absolutely purin-free diet is a matter of great difficulty, and no one need trouble himself to procure one. The faddist here again is guilty of a fallacy. He only takes into account the purin in the food, and leaves out of consideration entirely the fact that on a purin-free diet the leucocytes of the body may be increased to a large extent and may, by oxidation of their own nuclei, manufacture uric acid within the system. The whole question of the synthesis of uric acid is still a matter which demands much investigation, and no one can dogmatise on points of diet from the evidence which the researches of Fischer has placed before us. All that we know is that it is probable that there is some connection between the purin basis and uric acid, but we are quite unable to say whether the acid is manufactured from ingested

purins or from purin which is elaborated by the body cells themselves.

In conclusion, a word may be said with regard to the various theories for the prolonged lives which some persons addicted to special diets have enjoyed. A great deal has of late years been written about the advantages of a diet which counteracts the bacilli normally found in the large intestine. The theory enunciated by Metchnikoff assumes that these bacteria are responsible, in part at least, for the degeneration that results in old age, and supporters of this theory have adduced the fact that certain people who habitually consume fermented milk show a larger percentage of octogenarians than other nations who have not adopted this diet. The fallacy of such reasoning scarcely needs exposure. It has, in the first place, to be definitely shown that the percentage of old people among such nations as are drinkers or consumers of fermented milk is higher than among others who enjoy the same habits of life—a proof which is very difficult to give. Secondly, it has to be shown that no other habit or diet is responsible for this prolongation of life. Neither of these proofs is yet forthcoming, and, in the circumstances, it is reasonable to assume that the theory is nothing more than an unproved hypothesis. It is well known that centenarians have reached their old age by many different routes, and the variability of diet and habits of life that have been described among them makes it impossible to draw any general conclusions which

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are of service to the rest of mankind. The best explanation of such diversity is found in the theory that longevity depends on individual constitution more than upon habit. This does not exclude the possibility that by exercising care and discrimination in matters of diet and general hygiene a person may prolong his life, but the possibility is only relative and cannot be accepted as absolute.

CHAPTER VI

THE COMMONER FOOD-STUFFS

“Eat of that which God hath given thee.”—MOHAMMED.

MANKIND has laid both the animal and the vegetable kingdom under contribution to furnish food-stuffs for the table, and the range and variety of these foods are so great that volumes have been written on their properties, their adulteration, and their values.

Probably the most generally consumed food is that derived from the large class of cereals. In civilised countries bread, which is the main representative of this immense class, is regarded as the staff of life. It is the indispensable food for the worker, and those who do not consume it in the form of bread make use of its constituents in the shape of pastry or cake. Generally speaking, the finer flours are used in the preparation of cakes and pastry, and are nearly always combined with fats and sugars. In bread the staple ingredients are flour and water, with the addition in most cases of a suitable vegetable ferment or yeast.

In countries where wheaten flour is not used, other cereals, such as rice and maize, are made into bread, and it has therefore been suggested that a useful definition is one which states bread to be “the product of preparing cereal food by baking in a special form.” This is open to objection when it is borne in mind that “bread” can be, and some-

times is, made of other flours—apple, potato, coconut, and banyan meal, for example.

The difference between bread and cake is usually only one of degree, and depends largely on the quantity of sugar and spices added to the original flour and water. There are, of course, many different methods employed to make bread, and it is impossible to enter into them here. Messrs Jago's monograph on *The Technology of Bread-Making* gives exhaustive information on every detail connected with bread, and the reader who is interested in the question of bread, and the arguments for and against the use of particular kinds, is recommended to glance at some of the chapters in this work. Bread, consisting as it does of good wheaten flour, of which the carbohydrate element has been rendered more digestible by the conversion of a part of the starch into soluble dextrin, is almost a perfect food when it is used with an admixture of fat as it is ordinarily taken. It contains protein, carbohydrate, salts, water, inorganic and organic acids, and a small amount of fat.

From the results obtained by Drs Tunnicliffe and Brunton, it appears that brown bread contains a smaller amount of both protein and carbohydrate than white, but a slightly larger amount of fat. Experiments have shown that the protein of white bread is slightly better digested than that of brown. Brown bread is made from whole-meal flour containing the bran. The so-called "standard bread" is made from flour to which a further portion of bran

and offal of wheat have been mixed.

Messrs Jago, dealing with the question of the relative value of standard and white bread, make some apposite remarks with regard to the craze for the former. After pointing out that white bread contains more digestible protein, fat, and carbohydrates than standard bread, they go on to say: "The theory is advanced that standard bread contains certain at present unrecognised food substances, perhaps in very minute quantities, which may confer superior food value on the standard bread. . . . Underlying all such hypotheses, there seems to be the belief that the wheat grain is specially designed by nature as a food for man. One readily understands that milk is thus intended for food and for food only, and that by removing any one part, which removal may be considered harmless, the whole balance of nutritive value may be upset, because some unknown but nevertheless most important constituent has been taken away which Nature introduced for a special purpose. But the natural function of the wheat grain is the reproduction of the plant. . . . It is now universally conceded that the whole grain is not so well adapted for human food as certain portions thereof. . . . The similarity between the digestive systems of young animals and children is not sufficiently great to enable any very positive conclusions to be drawn in the one case from observations made in the other. There are most valuable animal food-stuffs which are absolutely unfitted for the diet of

children. With regard to the fortnight's experimental dietary on children, the author's opportunities of observation have been comparatively limited: but, so far as they go, have not been confirmatory of the opinion advanced (that standard bread is more suitable for growing children than white bread). In such cases the children have bitterly complained of the less palatable nature of their bread, have eaten less of it, and have begged to be allowed again to have white bread. On the change being made, their bread was eaten with keener relish and more of it, with an improvement in the children's general spirits. In any reasonable dietary the authors have the gravest doubts as to the superiority of standard bread as against bakers' white bread (the former with 6 per cent. of digestible protein, the latter with 7 per cent.). Turning from children to grown men, they express in no uncertain tone their preference for white bread. Navvies, the colliers of Durham, and the men in the Navy, all disciples of hard work, find white bread a better and more sustaining food than the browner varieties."

To sum up, white bread is richer in food and tissue-forming substances than brown; it is, on the whole, more easily digestible, more palatable, and less likely to disagree with the average diner. On the other hand, brown bread, owing to the amount of cellulose it contains, is less constipating and therefore to be preferred in some cases.

It is also, by virtue of the wheat-germ it contains,

a better source of certain vitamins (notably B₁ and E) and of minerals. It has, however, been suggested that its indiscriminate consumption may lead to gastro-intestinal troubles, owing to the laxative effect of its "roughage" (that is, cellulose) content. The "white v. brown" bread controversy is still undecided even among experts, and appears to have been responsible for the production of rather more heat than light.

Other preparations of cereals have, in general, the same high nutritive value that is possessed by bread. Polenta, the favourite cereal dish of Frederick the Great, is made from maize flour. Rice is a staple article of food in the East and is of a high fuel value, while its protein is easily assimilated; it is, perhaps, the most economical form of vegetable protein. Rye and barley meal possess a peculiar flavour which makes the bread baked from them agreeable to many palates; their digestibility, however, is lower than that of wheaten bread.

MEAT.—Nearly every variety of animal has been used to furnish meat for the table. In Constantinople one can still sometimes obtain excellent bear steaks; in South America equally good llama cutlets; and elephant's foot, that great dainty of which Nimrods talk with such gusto, has been served in a Venetian restaurant. But for all practical purposes the meat that the average diner has to consider falls into two large groups—that derived from domesticated animals, and that obtained from animals which are wild.

A few preliminary remarks on the selection of meats for the table may not be out of place here. Fresh beef should have a smooth, open grain, the lean should be of a good red colour, and the fat should be firm and white. If the fat is yellowish, it generally means that the animal has been fed on oil cake. Cow's flesh is more closely grained and generally paler; bull's beef is hard and stringy, and inferior in taste and quality. If there is the slightest suspicion of a smell, the joint must be rejected. Sometimes the staleness is best tested by plunging a thin sharp knife down to the bone and withdrawing it rapidly; if the knife blade smells, the meat is tainted and unfit for use. Mutton must be firm, elastic, and red, and the same test must be used to determine the soundness of the deeper parts. This test is especially important in the case of hams, which are often extremely badly cured. If a small animal, such as a lamb, is chosen, particular attention must be paid to its eyes; when these are sunken and broken, instead of being bright, the meat is usually stale. Pork must be firm, with thin rind, and smooth and cool to the fingers; the deep parts must have no taint, and the lean must be crisp and break when it is pinched. A young sucking-pig needs special attention, for it very soon gets tainted; look at its eyes, which must be bright, and at its belly, which must be firm and of an even whiteness. Veal must be firm and white, with plenty of fat mixed in the lean. The best whiteness is produced not by bleeding, though that

helps towards producing it, but by feeding the animal on a special milk diet. In choosing poultry or game the same rules must be observed, but with regard to the former it is very often necessary to test the age of the bird. The points to observe with reference to the freshness of the poultry, are: the vent, which in a fresh bird is always closed and firm, while in a stale one it is flabby and open; the thin membrane over the root of the bill, which must be moist and elastic when fresh; and the feet, which must be smooth and not too dry. Any cookery book will give detailed directions how to tell the age of the more common varieties of poultry exposed for sale, and the diner who procures his own raw supplies would do well to pay some attention to these and make himself thoroughly familiar with them, so as to be in a position to check his poulterer and prevent old birds being palmed off on him for fresh.

Meat is the staple article of food among all Northern nations, and most peoples who live in a cold climate. In civilised countries it is a comparatively expensive food, since it is highly concentrated. As a food it stands easily first after bread; it is well and quickly digested, and may be prepared in a variety of ways which enhance its flavour and in some ways promote its assimilation. In general, the flesh of adult animals is preferable, on purely dietetic grounds, to that of young ones—mainly because the latter is more intimately mixed with the fat—and lean meat is therefore to be preferred to fat meat. The digestibility

of red meat, again, is probably higher than that of white meat, but the differences between the various kinds is enormous and cannot be summarised into a general rule, as is so often done. The age of the animal, the special method in which it has been fed, and the work that it has done, are all points which count in the quality of the meat; but here again the differences are so varied that no good purpose is served by dealing with a few examples. Willich speaks of "house-lamb" as "merely prized because it is unseasonable; its flesh insipid and detrimental to health." Some parts of the animal are much more easily digested than others; for instance, sweetbreads, tripe, and brain are light dishes compared with sirloin and haunch of mutton. Blood has no special nutritive value; its food value consists simply in the small amount of albumin and in the salts it contains. The theory that meat is exciting, a popular contention with so-called vegetarians, is not borne out by facts; the bad effects of a meat diet are due not to the quality of the meat, but to the fact that on such a diet the individual generally tends to overeat. Bad and tainted meat, or meat that is diseased, is generally condemned. From a gastro-nomic point of view this is perfectly right, but the experiments of Decroix show that such meat may, under certain conditions, be consumed with impunity. The safest rule to follow, however, is to refuse meat that is in the least tainted. The fad of eating game "high" is due to an acquired taste for

the extra flavour which slight and commencing decomposition develops in some meats. Those who have not acquired this taste will immensely prefer to eat venison and game when perfectly fresh, and certainly the opinion that a pheasant must be eaten within eight hours after having been killed if its flavour is to be duly appreciated is one which every experienced gastronome will endorse.

With regard to game and poultry, the choice of taste is so diverse that each diner will have his or her own favourite to uphold against all attackers. Of English game-birds few surpass the golden plover, but the claims of the pheasant to be considered the choicest of game-birds is incontestable. The "fed" English pheasant lacks the delicacy of flavour which gives to this bird its surpassing excellence as a table dish. Partridges, snipe, quail, wild-duck, teal, widgeon, ruffs and reeves—the favourite birds of Talleyrand—larks, cock of the woods, ortolans, rails, heathcock, bustards, and the rare but exquisite polroach have all their individual merits and are firmly established in the gourmet's catalogue of good things. The essential point is that they must be eaten when in season—that is, when the birds are fat and at their best. A few are improved by artificial fattening; but in general the discriminating diner prefers to eat them in their wild state, and to trust to proper larding and careful preparation in cooking to enhance their succulence. Similarly with venison, hares, leverets, rabbits, wild-buck, and the endless

variety of wild animals selected for the table. When these are not in season, and when their meat is unusually devoid of fat, they are best served as a ragout. Otherwise, the ideal way of serving game is as a roast, or broiled. Domestic poultry, on the other hand, can be immensely improved by proper feeding and careful preparation before they are slaughtered. The excellence of the French chickens is due to the care with which the birds are treated. The Mans poulet has the reputation of being the best of the species, and most connoisseurs declare it to be the acme of perfection in chickens. Such judges, however, are probably unacquainted with the good qualities of the Styrian fowl, which can easily beat its French rival on points. Geese can nowhere be obtained in such perfection as in England, but the flesh of this bird is coarse, and there is some justice in Carême's opinion that it is only fit to be eaten once a year. Turkey, on the other hand, has always been regarded as one of the finest of table birds, and served with truffles and chestnuts it is a triumph of culinary art. Its flesh, properly prepared, is delicate and on the whole easily digestible.

The preservation of meat foods has been attended to of late years with much skill, so that to-day many preserved meats can be bought more cheaply than the fresh. Freezing and cold storage, for instance, have brought good lamb and mutton within the range of the poor. Generally speaking, such meat, if it has been properly preserved and is free from taint, is

excellent. Care must be taken to thaw it well and to remove the preservative, if salt has been employed, by soaking in cold water for a time before the meat is cooked or roasted. Hams and cured meats may be eaten raw, and, if scraped, are among the most digestible of foods. Spiced raw beef, either whole or pounded, is another excellent form in which animal nutriment is available for home consumption. There is perhaps no better quick lunch than a slice of bread-and-butter with some pemmican (the pemmican prepared by the Bovril Company is excellent) dusted over it. As a means for enriching soups, gravies, stews, and vegetable ragouts such powdered raw meat deserves a place in every kitchen. The variety of dishes that can be prepared from it is astonishingly large, while its nutritive value is unequalled by any other food-stuff on the market. Meat extracts, on the other hand, have a low nutritive value, and are more stimulants than foods. Beef-tea, for instance, notwithstanding its popularity, is little better than a good soup, and the patent beef-stocks in concentrated form which now flood the market are hardly worth the prices charged for them. As flavouring agents they have an undoubted value; but in general it will be found preferable to make a good stock at home, and to use this as a basis for soups and stews. Commercial beef-extract is convenient and saves time, but the difference between a dish made with its help and one prepared in the ordinary manner is usually so great that most people will prefer the home-made article.

FISH.—A large number of both fresh- and salt-water fish are eaten as food, and some species have won a deservedly high reputation as delicacies. In general, fish, when suitably prepared for the table, is an easily digestible, nourishing, appetising, and very economical food. It is pound for pound less nutritious than meat, but it is far cheaper and therefore more suitable for those who desire an economic diet. For dietetic purposes, fish may be divided into three great classes—fat fish such as eels, salmon, preserved sardines, turbot, and specially fattened carp; medium fat fish, of which halibut and trout are the most common examples; and lean fish, which are represented by such types as cod and whiting. The first class contains fish that have the highest nutritive and heat-producing value, owing to the fact that they contain a comparatively large amount of fat; they are also, generally speaking, more indigestible than the other kinds. The second class consists of fish that are of fair nutritive value and possess a moderate amount of fat; these are usually moderately digestible. The third class contains fish that have an almost equal nutritive value to those of the second, but which contain relatively little fat and are not of such a high caloric value; their digestibility does not differ greatly from that of the second class. Much depends on the manner in which fish is preserved or cooked, so far as its digestibility is concerned, and the different results obtained by various observers in investigating this point are due, probably, to the

different ways in which the articles investigated were prepared.

The best ways of preparing fish for the table differ with almost every variety. Some fish are excellent when boiled, others when fried, and others, again, when stewed. Slow boiling or steaming is on the whole the best general method, and nearly every fish may be prepared in an appetising manner by proper boiling and the subsequent addition of a well-made sauce. Even where convention has decreed that a particular species must only be done in a particular manner—as, for instance, turbot, which is nearly always boiled, and red mullet which is never boiled—the trial of another method will sometimes be found to give encouraging results. In choosing fish for the table, care must be taken to see that it is as fresh as possible. The ideal way is to secure the fish while still alive, for even in a cool atmosphere most fish do not keep longer than sixteen hours. When kept in an ice-chest or actually imbedded in ice, fish loses something of its flavour, and an important point to bear in mind when cooking fish is not to let it lie in water for any length of time. Quick washing and scaling where necessary are all that is wanted prior to putting it in the pot or pan, and the less the fish is touched with the hands the better. Medium-sized specimens should always be chosen in preference to large-sized ones, even of the large varieties. The cook must see that the flesh is firm and plump and elastic, and that the belly walls are

full and firm and not flabby, the scales bright and glistening, the eyes full and sparkling, the gills of a fresh red ; if the flesh is unduly soft, if the eyes are sunken and opaque, the fins limp and hanging down and the gills pale, with the belly flabby and the mouth dry, the fish should be rejected, since it is stale. Eels must always be obtained when they are vivaciously alive ; lobsters, crabs, oysters, and certain other denizens of the sea which are conveniently classed under fish, must also be alive. Only a few fishes improve by keeping, and in that case they must be very carefully treated. Thus, salmon have a richer flavour if kept on ice for three or four hours after they have been killed, and skate and turbot improve if hung for half a day in a cool chamber. In general, however, the best rule is : “ Eat your fish as soon as you conveniently can.” Another important rule is : “ Eat only fish that are in season.” Rarities obtained out of season—like enormous specimens of fruit or vegetables, which, on account of their extreme size, have an added price—are usually not worth the extra money that they cost, and are abominations to the true gourmet.

Sea-bream, a cheap and common fish, is hardly ever seen at table ; it is, nevertheless, one of the finest sea-fish obtainable in London, and can be served in a variety of ways, of which the best is probably boiled in white wine and eaten with a *béchamel* sauce. Pilchards, herrings, and mackerel are essentially “ seasonable fish,” and like white-

bait are insipid and flavourless when eaten at other times. Sardines, fried like smelts and fresh from the sea, are unsurpassed for richness and delicacy of flavour, but the art of serving them in perfection appears to be confined to the Basque cooks ; certainly, nowhere can they be tasted in a more ideal state than at St Jean de Luz. Fresh haddock, especially when caught in Scotch waters, must be well prepared ; unnecessary handling and overcooking entirely spoil its delicious flavour. Cod is a useful but somewhat coarsely flavoured fish, and the method of crimping it in large pieces is not conducive to ensuring proper cooking, since the inside of the slices are hardly ever done well. Turbot is perhaps the most generally suitable fish for a dinner menu in the early part of the year, and its merits have been lauded to the skies by fish lovers from the times of Juvenal. There are many ways of serving this excellent fish, and every diner will have his own favourite way ; the consensus seems to be that a plain-boiled turbot with *béchamel* sauce cannot be improved upon. Salmon, again, is best served plain-boiled, with a piquant sauce : grilled or broiled it is less digestible and its flavour too pronounced. It is essentially a coarse fish, and, although it lends itself well to various refinements, it can hardly compete with turbot for all-round excellence.

Anyone who has sampled the fish cookery in other countries, and who has tried the river-fish as provided at little inns on the Continent—and,

fortunately for the reputation of Isaac Walton's recipes, at some English ones too—will agree that the choice of a favourite fish is one of the hardest tasks to which the gourmet can set himself. Trout, both lake and river, are generally considered the most delicately flavoured of the fish tribe, and those who have tasted the excellent trout that come from Lake Garda, the red trout from Andermatt, and the trout from the Canadian lakes will know how excellent indeed they are. Pike and carp, and char, especially the Swiss lake-char, are all fine fish; but, so far as Europe is concerned, the palm of river-fish must be awarded to the splendid fougash of Lake Balaton and the exquisite "Schwartzze Ritter" in the König See. The mountaineer who sets out to climb the Dachstein, halts for the night at a little inn which has its special lake in which the latter fish are found; they are caught by trawling immediately before dinner, and, served up at once either fried or plain-boiled, with the accompaniment of melted butter and baked potatoes, are a revelation to those who taste them for the first time. Fougash is best broiled, but may be prepared in a variety of ways, nearly all equally good. Sturgeon, which is a very rare fish, is far inferior to turbot, even when served in Carême's expensive way. The traveller will add to the list of good fishes a vast number of species of which next to nothing is known in England. In America, undoubtedly, one of the finest is planked shad; and the immense variety of good table fish

eaten in the West Indies, and in tropical countries where fish is a staple article of diet, need only be referred to.

Lobsters and crayfish are commonly regarded as indigestible luxuries, but this opinion is not quite correct. Some diners have a decided idiosyncrasy as regards these shell-fish, and take a longer time to digest them than others. An experiment showed that a well-prepared *langouste* mayonnaise took thirty minutes less to digest than a similar quantity of equally carefully made salmon mayonnaise. The nutritive value of the former, however, was only a fourth of that of the latter, and the coral, which is probably the most indigestible part of the lobster, had been carefully removed.

Oysters consist largely of water and contain comparatively little nourishment, but are easily digestible as a rule. Crabs are about as nourishing as lobsters, and a trifle more easily assimilated. The addition of vinegar to all shell-fish flesh renders the latter more easily acted upon by the digestive juices, and is therefore to be recommended, so that the common method of serving these fish as salads has much in its favour.

Pickled fish and fish prepared in special ways, like the excellent *bouillabaisse* obtainable in New Orleans and at the Cape (where the recipe is probably a combination of an old Marseilles method with the Javanese way of preparing cold curried fish), are table dainties which only need to be tried to be duly

appreciated. The combination of flavours and the addition of vinegar are aids to digestion, which more plainly prepared fish-dishes lack. On the other hand, fish pies and pasties, in which boiled minced fish is subjected once more to the action of heat, are probably the most uneconomical and indigestible ways of serving this article of food. To sum up, fish is an excellent, cheap, and nutritious food, eminently suitable as a "food for the people," not only because of these reasons, but also because, provided care is taken that it is fresh, it is generally to be obtained in a state of purity and free from disease. The theories that fish-eating is responsible for certain skin diseases are quite unproved.

Snails are very nutritious and easily digestible articles of diet, and are extensively consumed in Europe and America, though in England there is still an entirely unreasonable prejudice against them. In Paris alone more than a hundred millions are annually eaten or disposed of. The best variety is undoubtedly the Bourgogne or Vignerons, which comes from the vineyards of the Champagne and is greyish-red in colour. It is carefully bred and is fed on salad, though some varieties are elaborately dieted on milk. It is scarcely likely that such a diet improves their quality, and the custom of feeding them on milk is probably as reasonable as that of Anaxaceros, who watered his lettuces with milk the evening before he picked them, on the assumption that they took up the liquid nourishment and became immensely

improved thereby—a theory which is not borne out in practice. The snail may be prepared in a variety of ways, and is too often smothered in garlic, which disguises its taste and flavour and creates a repulsion in those who are unaccustomed to this addition. Dainties such as frogs' legs, sharks' fins, birds' nests, fat goat-suckers (which come from the Humboldt cave in the Andes), and other rarities, are scarcely likely to become general foods and need only be referred to. They are all nutritious but uneconomical foods.

SALADS.—Sidney Smith sang the praises of the salad in a verse that has become a culinary classic. John Evelyn devoted a book to salad culture, and the learned etymologists of the seventeenth century discussed at length the origin of the word—a question which even at this date has some interest. The Pali "*latas*," from which our "lotos" or "lotus" has been derived, originally meant an eatable vegetable; the lotos-eaters were probably people who fed on specially succulent varieties of salads, with the result that they acquired a permanent Sidney Smithian sense of satisfaction and a virtuous altruism such as Gerson said was peculiar to those who lived mainly on cress. The Latinists spoke of salads as *lactuca*—like milk—in order to denote the blandness and general excellence of a good salad. Our modern word is a derivation of the low Latin *salata*—that which is prepared with salt, and is directly connected with the word *sal*—salt, a food constituent which was held

in deservedly high esteem, as the modern etymologist who has traced the derivation of the word salary well knows.

A salad, properly speaking, is an edible vegetable, or a mixture of edible vegetables, dressed with salt and oil, and flavoured with certain condiments. The number of vegetables which may be used as the basis for a salad is enormous, and probably the diner who has been content with lettuce, cress, and cucumbers hardly realises what a wealth of material his back-garden or the countryside may yield on investigation. The garden varieties are, of course, the more commonly used salad vegetables. Among these lettuce and cress stand easily first. There are innumerable varieties, and every year gardeners are producing new ones which surpass in succulence and general merit the older brands. The *laitue sanguine à grain noir* is a little-known kind which makes a very appetising and attractive salad, though its flavour is a trifle more pronounced than a good *cos* lettuce. Lettuces should never be put into cold water, as this makes them insipid and tasteless; all that is required is to wipe them well with a moist cloth. Only the central heart leaves are used, and these are so well protected that dirt and contamination are not to be feared. The ova of parasites are easily removed from such leaves by moist wiping, after which the leaves should be piled lightly in a salad-dish and the dressing made at once. Salads should be dressed immediately before serving in the majority of cases, and the

dressing should be made from the best ingredients only. The Spanish proverb that it needs a spend-thrift for the oil, a miser for the vinegar, a wise man for the salt, a madman for the mixing, and a saint for the eating, is not far off the truth. English salads are usually very badly made, especially in vegetarian restaurants. Too little oil of an inferior kind is used, and too much vinegar, while the *furniture*—the onion atoms lurking in the bowl, the suggestion of thyme and mustard—so important in a good salad, is conspicuous by its absence. Yet a good salad, well made, is a dish which *par excellence* deserves a place on the table. Plautus sang its beauties, and Molza, the Italian poet, composed a long poem in its praise. Newton ate largely of salads when he was engaged in his philosophical work, and Xenophon regarded them as the best diet for a literary man. These opinions have much in their favour. The fresh vegetables, with the dressing, furnish a wholesome and agreeable food which is fairly easily digestible, and which suffices for all the needs of the day. Oil is a powerful heat producer and a highly nourishing food; the salad vegetables, although in themselves of low nutritive value, have important vegetable acids and salts which are very useful to the body. Provided a salad is well dressed and well chewed, it is an easily digested dish which should never be absent from the table, and which is especially suitable—indeed almost indispensable—in the children's menu. On the other hand, a badly made salad—such as

those which we get at most restaurants as an accompaniment to roast game or poultry—is an abomination which ought to be shunned by the wise diner.

Among the varieties of vegetables which the experimenting gastrosoph may advantageously make a trial of for his salads are endive (which is also excellent when served as a cooked vegetable with *béchamel* sauce), chicory, valerian, beetroot, celery, cress, dandelion, pimpnel, hedge-mustard, flixweed, the sorrels, sweet cicely, various species of ranunculus, and last, but not least, borage, mint, wormwood, purslain, rampion, saxifrage, marsh-mallow, and fennel. All these last have a pungent flavour and are not likeable eaten by themselves, but as an addition to the ordinary salads they are to be recommended. Asparagus tops, tomatoes, avocados, cucumbers, melons, lemons, and oranges, and a large variety of fruits, may be made into excellent semi-sweet salads which may be classed among vegetable salads. The green chutneys, which are so highly esteemed by the Oriental nations, are really salads made without the use of oil. One of the best of its kind is quince sambal, made by pounding (or, better still, finely rasping) green or just ripe quinces and flavouring with spices, salt, and capsicums; another easily made sambal is prepared from rasped apples and the scraped inner core of a pineapple. Like all salads, these green sambals must be made just before required for eating, and in their preparation only silver forks or rasps must be used, otherwise the salad rapidly gets discoloured.

Sweet salads are too well known to need description. Nearly every fruit, raw or stewed, preserved or fresh, can be used as the basis, but much care is necessary to blend the flavours properly. Preserved fruit must not be mixed with fresh, although it may be used as an ornament or to heighten the attractiveness of the dish. Teetotallers are at a great disadvantage in making fruit salads, since wine alone brings out the full flavour. Anyone who has eaten a cherry and guava salad made with red Voslauer, and then tried the same dish made with a "temperance dressing," will readily appreciate the surpassing excellence of the former preparation. A trial of unfermented wine juice is always advisable, but the substitute can never equal ordinary wine as a salad-dressing. Fruit salads are to be served both in winter and summer; in the latter season they must be well cooled but never iced.

Salads made with boiled vegetables, meat and fish salads hardly need any description; they are really not salads in the true sense of the term, and are much more solid and more highly flavoured dishes which should be served as a special course. The variety of combination which the clever cook can select from in this branch of the art is amazingly rich, but the greatest care should be taken that the materials are the best of their kind and quite above suspicion. No words can be strong enough to condemn the practice of turning into a meat or fish salad a joint or a fish *relevé* which is unsuitable for any

other purpose owing to the fact that it is tainted. It is true that the highly spiced dressing may disguise effectively the decomposition taste, but it cannot prevent the effects of such decomposition of the food itself.

VEGETABLES AND FRUITS.—Little need be said about these here, since we have already dealt in summary with their general properties and digestibility. Their nutritive value varies immensely. Thus, the leguminous seeds, such as peas, beans, lentils, have a very high nutritive value; tuberous vegetables such as potatoes, sweet potatoes, carrots, turnips, and beets have a much lower nutritive value, but when properly prepared are very agreeable and well-flavoured additions to the menu. Vegetable cookery in England is unworthy of the name, and nowhere else in the world—with the possible exception of the Solomon Islands, where it is the fashion to eat potatoes mixed with palm-oil that has been allowed to go rancid—is the art of improving vegetables by cookery less well understood. In most cases this is due to sheer carelessness. The proper preparation of French beans may be a matter that demands some degree of skill, but no skill is demanded in adequately stringing the beans or in peeling tomatoes, old asparagus, and cucumbers as a preliminary to placing them in the pot. Nor is any great art demanded in properly draining off the water before these vegetables are served on the table. The sins of the British cook in preparing vegetables are mostly sins of omission,

and can easily be avoided by the exercise of a little common-sense and discretion. The proper cooking of vegetables needs no great art or education if the cook takes thought of the main principles, the most important of which is to preserve the flavour and delicacy of the vegetable and to increase its succulency. Those who prefer vegetables plainly boiled, without the addition of gravies, or sauces, or fats, have a comparatively small range of choice. Potatoes and greens are at their disposal, but the smaller vegetables, the gourds, and the majority of leguminosæ are unappetising and flavourless when served in that way ; while, on the other hand, they gain immensely in flavour with proper preparation such as is given them in a French or German kitchen. Fruits are too often ill prepared as well, and English cooks do not know the full value of certain condiments which greatly improve the taste and delicacy of fruit flavours, especially in stewed fruit. Cinnamon, nutmeg, cloves, allspice, ginger, vanilla, and the peel of some citrus fruits (notably tangerine), are all worth a trial, but in every case great care must be taken that the addition of spice or condiment helps to accentuate the true fruit flavour and does not disguise it. Similarly, some fruits are much improved by stewing in wine ; others by a preliminary soaking in white wine or digestion in sugar. For example, the horrible way in which pines are usually served at table needs reform. The central hard core of the fruit must be carefully removed, and the sharp rind, which is

intensely irritating to the mucous membrane of the mouth, must be taken away. A good way of serving the fruit is to peel it carefully, core it, and then cut it in fairly thick slices with a silver fruit knife. The slices are then arranged in a glass dish and castor sugar is strewn over them until they are wanted, when they are served in a pine shell which has been cooled on ice. Water-melons—a delicious and very delicately flavoured fruit which can now be as readily obtained in London as in Naples—need no preliminary preparation for the table except when they are of large size. In that case they must be cooled on ice and only the core—or the crown, as it is called—must be served up, care being taken to remove the black seeds. Sweet melons may be served up in slices, or as liqueur melons, since the addition of a good liqueur brings out the flavour of the fruit to a surprising extent.

PUDDINGS AND SWEETS.—Here, again, a very large selection is available, and it is impossible to deal with even a type of every variety. The nutritive merit of a sweet dish depends largely on the carbohydrate that it contains. The amount of protein in such a dish as caramel custard, tapioca pudding, banana fritters, or a *bombe* or *granite* is comparatively small; the amount of heat-producing constituents, on the other hand, remarkably high. The richness of a sweet dish depends largely on the amount of fat it contains, and the more fat present the less digestible in general will the sweet be. Plum

pudding, owing to the large amount of suet it contains, is particularly indigestible, and should be eaten in small quantities and well masticated; the fashion of frying it in slices several days after it has been cooked makes it still more indigestible, and as a rule this dish should be avoided in a menu that already contains such hardly digestible delicacies as goose, turkey, eel pasties, and mince pies. One of the richest and least easily assimilated sweets is Francatelli pudding, the basis of which is a chestnut *purée*. Cream-ices and water-ices, or *granites*, are in general easily assimilated, but do not possess a high nutritive value and must be eaten slowly and in moderation. Punches and *sorbets* are mainly stimulants and not properly to be classed as foods. A *bombe*, or ice, is much enriched and its food value considerably raised by adding to it certain food-stuffs, as, for example, in the *fromage de dames*, in which apricot jam is added to cream vanilla ice.

SOUPS AND BROTHS.—These possess a fairly high dietetic value, and, when well made, their nutritive worth is considerable. A helping of good *consommé* is perhaps the best thing with which to commence a meal, since nutriment in this form is easily assimilated and is probably both a psychical and a direct stimulant to the digestive function. The custom of starting a dinner with soup therefore rests on a good dietetic principle, and is particularly to be recommended if the diner is tired or if the meal is a hurried one. Thick soups and broths are less wholesome, since they

demand more time for their digestion and absorption, but their nutritive value is also high. The basis of every soup should be a good *bouillon* or stock, of the kind which French cooks call *grand bouillon*. It is the rule that in the composition of such a basis at least two kinds of meat must be used, and the essential point is that the stock must simmer for a long time. An earthenware saucepan must be used, and the liquid carefully skimmed, all the fat being removed, while to prevent undue evaporation the saucepan must be kept covered. Another point to bear in mind is that the soup must not be allowed to grow cold in the vessel wherein it has been boiled. Fish soups and vegetable *purées* need special care, and the preparation of turtle soup has long been recognised as the test of a great culinary artist. Calf's-tail soup is an agreeable variety of the more common ox-tail soup, and should be tried by those who have only tasted the latter; its flavour and delicacy are much superior to the broth made from the older animal. White milk soups and wine soups are comparatively little known, but rank high among their rivals and are well worth study. For the preparation of vegetable soups it is best to trust to a milk stock and to discard the now so commonly used yeast extracts, which have no nutritive value and merely ape the flavour of meat extracts which they can never equal.

EGGS AND THE FATS.—Eggs are almost ideal foods, since, like milk, they contain all the proximate

principles. They are somewhat deficient in carbohydrates, contain a relative superabundance of protein, and may be classed as concentrated foods. The ordinary hen's egg is the commonest variety seen on the table; duck eggs and turkey eggs are preferred by some. The eggs of game birds such as the plover, in which the white remains transparent after boiling, are more easily digested than those of the domesticated fowl, and it is probable (although investigations have yielded somewhat contrary results) that a soft-boiled egg is more easily digested than a raw one. A penguin's egg, which possesses a peculiar flavour and delicacy, contains a high amount of nourishment and more carbohydrate than the ordinary hen's egg; it is not, however easily obtainable elsewhere than at the spots where these birds breed. It is essential that all eggs used for food should be fresh. The common custom of using bad eggs, that cannot be boiled or "fried," to prepare pastry and enrich dishes is to be condemned, since it not only impairs the flavour of the dishes, but also their digestibility. A bad egg probably contains as much nourishment as a newly laid specimen, but psychical influence is a matter which cannot be overlooked in dietetics, and a curate's egg consumed at the beginning of a breakfast very probably means a considerable delay in the digestion time of whatever food is taken subsequently! Fats are necessary concomitants in every diet. The most ordinary type of this class is butter, which contains nearly ninety per cent. of pure fat. It

must be absolutely fresh, not too salt, and not coloured by artificial matter. In this form it is a relatively expensive form of fat. Fortunately, excellent substitutes are to be found in dripping and margarine, the nutritive and heat value of which is as high as that of butter, while these forms are much more economical. Another way to obtain the necessary amount of fat is by using oil in the cooking or by adding oil to the food as in the preparation of salads. Oil is easily digested, has a high heating and food value, and is on the whole economical. Its disadvantage is that it is very apt to disagree with some persons. In that case it must be taken in very small quantities at a time, and the idiosyncrasy will generally be overcome after a while.

Cheese is a form of food in which fat is combined with a relatively high percentage of protein. It is one of the foods that has the highest nutritive value, but it is very questionable whether the protein of cheese is easily assimilated, even though some of the cream cheeses are readily digested. "Vetustos caseos Salemus damnat" wrote the author of *De Re Cibaria*, but few of us, who love and revere cheese, will agree with this sweeping dictum. Toasted cheese, and the addition of grated cheese to soups and vegetables served *au gratin*, are excellent ways of varying the administration of this form of food; but served in this manner cheese is not readily digested, and the cook must therefore be sparing in the use of the article. On the other hand, cheese served

as a *fondue* or *soufflé* is easily dealt with by the stomach.

CONCENTRATED AND PREDIGESTED FOODS.—Many patent foods are now on the market, and their virtues are so persistently lauded by the press that every gastronome ought to investigate their merits. In general it will be found that these concentrated foods, so far as healthy individuals are concerned, offer no advantages over the less common types. They are much more expensive, generally tasteless, and therefore lack the gustatory stimulus which is so important in an article of diet. Their nutritive value is theoretically high, but probably the tissues do not make use of all the protein that they contain and the greater part is eliminated as waste. In the circumstances they are a very uneconomical form of food, and should be avoided. In cases of sickness or in special circumstances they have their uses, but they should be excluded from a normal diet.

STRANGE AND OUT-OF-THE-WAY FOOD-STUFFS.—In every country are to be found food-stuffs that have a local vogue. Some of them are highly praised by those who prefer them, and as cordially condemned by those who are unused to them, and who find the taste for them bizarre if not, indeed, disgusting. Yet the majority of these food-stuffs contain much nourishing material, though some of them are used entirely as appetisers or condiments.

To take the latter first, our forefathers had two favourite condiments about which ancient writers

wax loud in their praise. A modern diner will find it difficult to appreciate *garum*, the curious concoction of fermented shrimps in which the Roman epicures delighted. It is still used, under other names, in various parts of the world, where it has a high reputation. The Annamite *Man tom* is practically Roman *garum*; so is the *nuoc-mam* of Indo-China, the *ngapi* of Burmah, the *poh lemu* of Siam, and the popular *trassi* of Java that is served at the best *ryst-tafels*. They are all mixtures of small fish with vegetables that have been allowed to ferment, whereby the fats of the fish have been broken up into the fatty acids that give to the condiments their peculiar, and, to most of us, repulsive odour.

Mixtures of sour and sweet, bitter and sweet, saline and sweet, or more intricate combinations of various flavours with both sweet and bitter substances, were used from the earliest times, and their modern successors are the varieties of chutneys, *blatjangs*, and bottled sauces. The simplest of all was, perhaps, the *hybla*, which Pythagoras ate with his dry bread, a mixture of honey and ginger or some other spice, in consistency and flavour probably much like our "golden syrups." The use of spices we owe to the Orient; our western forefathers knew few of them, and they only came into general employ after the foundation of the East India companies in the sixteenth century. The renowned "*Mithradate*" must be regarded more as a pharmaceutical than as a culinary concoction, and there is no evidence that it

was used at the table ; it was a vile combination of twenty varieties of spices with nearly as many officinal fruit and vegetable juices, macerated in honey and wine, with the final addition of opium.

Every country makes plentiful, and, on the whole, good use of its natural resources to augment its food-stuffs, but where some natural product is by experience found to be particularly nutritious, it is soon adopted by neighbouring countries, and, generally by cultivation, made to yield better food than can be obtained from it in its natural state. The modern wheats, potatoes, sweet potatoes, ground nuts, rice, millet, and maize are examples of such local vegetable foods that are now universally employed. Yet many are left that have not reached that universal favour, although they are well worth incorporation in our diet lists. Dr Leitch, in his chapter on "Tropical Food-stuffs," gives an interesting list of such less well-known foods, most of them vegetables. Among these are the leaves and roots of water lilies, the many vegetables used as spinach, and the vast number of little known seeds, mainly belonging to the pea family, and bulbs that possess varying degrees of food value. In the Cape Peninsula alone there are more than a hundred wild-growing plants that possess food value, and that can be incorporated into the dietary, and the number of such plants throughout the African Continent must be amazingly large. Some of them might be usefully cultivated to enrich the food material that they contain, and in time be

used as substitutes for garden vegetables or for cereals.

By preparing well-known food-stuffs in some particular manner, many nations have evolved dishes that have a purely local reputation. The variety of such dishes is well exemplified in the case of wheat. The Hungarian *taronhya* is altogether different from the Chinese *noodle*, which again is quite unlike the German variant of the same dish or the various *tuwo* porridges that constitute the staple farinaceous diet of Central and North African native tribes. The good cook would do well to study these methods of preparation, for he may learn something from each and all. Cookery, indeed, is as much a comparative art as religion is said to be a comparative science. The close study of all these recipes inclines one to believe that what is called "national cookery" consists not so much in the use of local ingredients as in the combination of ingredients that are used the world over, and in obtaining by such combinations differences in flavour, texture, and tastiness of made dishes that are called by different names from those given to them elsewhere.

There remain for consideration the many food-stuffs that have a limited appreciation, nearly always local, although it is interesting to note that such appreciation often overleaps space and appears in nations that live leagues apart. The taste for dogs' flesh is common to the Chinese and the American Indians. The distaste for fish and for rabbits is shared

by the Bantu tribes and peoples who have no racial analogy to them. Horse flesh is favoured on the Continent, where it enters into the composition of many varieties of *salami*, but is despised by most of us, and many a large game hunter will shoot a zebra for its skin, but leave the carcass for the carriers, although there are few more delicious dishes than a zebra "*nierenbraten*." Among wild fowl, nearly all varieties are eaten, but even here one meets with curious vagaries of taste. The water-feeding birds have a world-wide reputation, but many species are local and therefore beyond the reach of the ordinary diner. One of the most delicate fleshed of all is the flamingo. Johann Schreyrer, who ate this bird in the latter part of the seventeenth century, describes its flesh as particularly tender and delicious, but one is inclined to doubt if he does not draw too much on his imagination, for he gravely remarks that soup made from flamingo flesh has the rich red colouring of the wing coverts. Flamingo flesh is dark in colour, like that of grouse, and soup made from it is exactly similar to a rich wild-duck soup.

Squirrels, hedgehogs, porcupines, even mice and small rodents, are not only edible, but, when suitably prepared for the pot, very eatable. The taste for hairless young mice, dipped in honey and flavoured with cinnamon, is, however, an acquired one, although it is probably not more bizarre than the taste for live oysters. To western palates the flesh of snakes may not appeal, because here again convention has invested

the snake with qualities that rouse disgust and repulsion. It is rich in fat, and of a peculiar, smooth, oily taste, reminding one of terrapin flesh, and there is, after all, no great difference between a tortoise and a snake. Lizard flesh, especially that of the large tree and water iguanas, is delicate, short-grained and tender, without the coarse flavour that one is apt to associate with it.

When we come to the flesh of sea animals, the variety is too large for enumeration. Anyone who has visited the fish markets of the West Indian islands must have been amazed at the host of different species exposed for sale. Here I can only allude to a few. Whale flesh is like coarse-grained beef, and no matter how well prepared it has an equally coarse flavour. Dolphin flesh is somewhat similar in texture, and although much esteemed by our forefathers, will hardly appeal to a sophisticated palate. Of sharks, the fins rank as Chinese delicacies, but whatever merit is to be found in a dish of them lies in the sauce which accompanies it. In quite another category stands the pearl mussel, the flesh of which, properly prepared without a drop of water being allowed to touch it while it is slowly steaming in its own juices, is lusciously rich, of the consistency of soft marrow, with a taste and flavour that will delight the *gourmet*. Creole cookery excels in preparing fish for the table, and makes good use of shell-fish whose flesh in general needs careful preparation to be made tender and digestible. The sea provides us with an almost

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inexhaustible store of food material, which should be conserved and utilised to a greater extent than is at present the case. Not the least valuable of its many food products is seaweed, much of which is edible, while some of it, when carefully prepared, is exceptionally delicate in flavouring.

CHAPTER VII

DRINKS AND DRINKING

“ These reasons, then, for drinking try—
Good wine, a friend, or being dry,
Or lest you should be by-and-by,
Or any other reason why ! ”

DR ALDRICH.

WATER is an integral part of all animal tissue, indispensably necessary for the formation of such tissue and for the ordinary functions of animal life. As Mohammed remarked, it is the great animater ; without it nothing can live. The Greeks called their dead *alibantes*,¹ “ Those that are without moisture,” for the necessity for water, or moisture in some form, was well known to the ancients, whose legends and folk-tales lay stress on the importance of pure water. History records several instances where the kings were supplied from a special well or fountain, which was taboo to the people, and the waters of which were regarded as having special delicacy and probably also some healing power. A careful search through the available literature has revealed no instance of any

¹ The exact meaning of this word has been much disputed, but the interpretation given above is that which is generally accepted by etymologists.

individual who abstained from water, with the problematical exception of one German gentleman who is stated to have imbibed no fluids, neither wine nor water, for a period of thirty-three years. In his case it is evident, however, that he must have obtained his moisture from soups and broths, or in some other way, since the human body cannot bear deprivation of water for a longer period than three days. Water at a body temperature is more easily absorbed than cold water, and has a much greater peristaltic action on the intestine. For drinking purposes the water used must be absolutely pure; it must not only be free from inorganic contaminants which alter its taste and quality—as in the case of hard water, which is impregnated with lime salts—but from all organic impurities, which are in general much more harmful. Shallow river water, and the water from surface wells, and from low-lying ponds, springs, or watercourses, should therefore be avoided. Water that comes from deep wells, or from fountains that issue from a great depth, the water of rivers that have emerged from some high source and have coursed through hard soil, and rain-water, or that derived from melted ice or snow, is in general to be preferred. Where any risk of contamination with organic matter exists, the water must always be boiled. This is especially important in regions where contamination is known to be prevalent. By boiling, the water loses its distinct taste—which is generally due to the fact that it holds air in suspension—and it is therefore often regarded as

an insipid drink. Such insipidness can, however, be amended by re-aerating the water, or by adding to it suitable flavouring agents such as a drop of lemon juice. Where the water is conveyed in leaden pipes care must be taken that it is free from lead salts, which are readily dissolved by soft waters.

MILK is the great food beverage of all mankind, and is undoubtedly one of the most important food-stuffs which we possess. It contains all the proximate principles of food in more or less satisfactory proportions, but is deficient in iron salts, and for adults the quantity of carbohydrate it contains is too small and must be augmented by other food-stuffs, the most economical of which is bread.

Milk is not easily digested by some people, and a milk diet is apt to be very constipating. Both objections may be overcome by adding citrate or bicarbonate of soda to the milk when drunk, and by taking care to swallow the fluid in small mouthfuls. When it enters the stomach, milk is curdled, and the ease of its digestibility depends to a large extent upon the solidity of this resultant curd. The curd formed from citrate milk is usually softer and more easily digestible than that from ordinary milk. By adding acid fluids or rennet to the milk, the familiar dish known as curds and whey is produced. The curd formed in this manner is very soft, digestible, and contains the greater portion of the fat and protein

of milk, while the whey is a nutritious and easily absorbable drink, holding in solution the milk albumin, milk sugar and salts. Fermented milks such as koumiss and yougourt are acid milks which have been allowed to undergo fermentation by being acted upon by special bacilli. Varieties of these milks have become very popular, under the name of "sour milk," and have been reputed a panacea for all the ills that flesh is heir to. Their use, like that of good buttermilk, is agreeable and wholesome unless they are taken to excess, when they are apt to produce digestive disturbance. As medicinal agents they act partly through the acid which they contain and partly also through their bacteria, which have some as yet imperfectly understood action upon the intestines. Their value, however, has been much overrated. As a nutritive, refreshing, and agreeable drink, few beverages surpass buttermilk made in the old style, but it is nowadays difficult to obtain in a pure form, and it is therefore relatively expensive.

When we have left milk and water, we are confronted by a large class of common beverages which, although they can scarcely claim to be foods in the true sense of the term, are yet for the most part valuable food adjuncts. Most of these drinks contain certain principles which are stimulants. By a stimulant is meant something that increases the metabolism of the tissues and enables the organism to do more work, with, at the time, a less appreciable expense of energy. This definition is not a good one, but it will

serve in the circumstances, provided it is borne in mind that the stimulating effect really means the expenditure of an increased amount of energy, however little the individual may appreciate it at the time, and that it is inevitably followed by a reaction. To some extent, therefore, all stimulants are also depressants, ultimately. It is impossible to stimulate the organism indefinitely ; it must obtain food to repair the waste and to provide the potential for more energy. The question is whether stimulants can give such energy by themselves, whether they are in fact tissue builders as well as tissue stimulants, and this question, which has exercised the minds of dieticians for many years, cannot be said to have been answered as yet, notwithstanding the enormous amount of research on the subject. The chemical composition of these stimulants does not tell us much that will be of value in the discussion. We know the formula of all the stimulants ; we know that the alkaloids approach in their chemical structure the carbohydrates, but we know also that the dietetic value of a substance cannot absolutely be foretold from its chemical composition. It is possible that the amount of carbon contained in alcohol is used to build up the tissues ; that the hydrogen in caffeine is similarly utilised ; but we have no certain data to go upon, and for the most part the discussion centres round probabilities. That being the case, it is preferable to judge these beverages mainly on their gastronomic value.

For centuries the world has been quarrelling about the subject of Alcohol. Even before the term was known, the inebriating qualities of wine and fermented liquors were only too apparent, and provoked a keen discussion in which personal and individual taste, predilection, and advocacy counted as much as logic and the desire to arrive at unbiassed conclusions. It is much to be regretted that the subject in our own times has not been attacked in a more impartial and judicial fashion, but there seems no hope that the advocates on either side will refrain from exaggeration and distortion and present facts as they are, leaving the diner to draw his own conclusions.

There are at the present time two great schools, the anti-alcoholic and the pro-alcoholic. The one maintains that alcohol, in any form and any quantity, is injurious—if not directly, then at least remotely—to the organism; the other contends that the harmful effects which undoubtedly result from the drinking of alcoholic beverages are due to the impurity of these beverages or to the fact that an undue quantity is consumed—in other words, that alcohol, taken in a moderate quantity, is not injurious to health but has its beneficial uses. The controversy has been so much overloaded with moral and ethical considerations on the one, and purely chemical and physiological arguments on the other, that the average diner is in a quandary and unable to draw any stable conclusions from the host of directly contradictory results placed before him.

The more recent authorities on the question of alcohol as a food state that only a very small quantity of its energy value is absolutely lost. "It is burnt up and acts as a tissue sparer," remarks Van Noorden, and its value in this respect is seen pretty conclusively from the fact that the oxidation of 100 grammes of alcohol prevents the destruction (*i.e.* saves for future availability) 77 grammes of fat. The reasonable inference, therefore, is that alcohol, taken in small quantities, is a valuable dietetic aid; it is no more a food than a tablespoonful of jelly is, but it is as much a food sparer as the latter and has a definite place in the dietary. Add to this the fact that it is rarely consumed alone; that all beverages which contain it also contain sugar, and certain pleasant extractives which have an undoubted psychical influence upon the diner, and it is obvious that the man who takes wine in a sane and moderate manner, who drinks beer, not because it makes him drunk but because he likes it better than lemonade or milk, and who consumes brandy and water for the same reason, occupies a strong logical position from which it will need more than fanatical reiteration to drive him. With the moral question of drinking we have nothing to do here. The only point that needs consideration is whether or not the use of wine, by the gastrosoph who takes it with his food as an agreeable, stimulating drink, is deleterious to health.

The answer to that question, which is supported by all unprejudiced authorities on diet, is that a

moderate use of wine, and therefore a moderate use of alcohol, is not harmful to health any more than a moderate use of coffee or tea. Excess in the drinking of any beverage is directly harmful, just as much as overeating is harmful. The teetotallers assert that in times of stress and strain the drinker invariably succumbs first. That, however, is no argument against the moderate use of alcohol; it is merely a proof of the fact that excess vitiates the organism and renders it less able to defend itself against outside attack. Let us admit once and for all, to make the position clear, that no dietician contends that alcohol is a necessity; the only absolute necessities, as we have seen, are proteid and water. The argument that indulgence in alcohol is responsible for certain diseases (such as cirrhosis of the liver) is quite unproved; we merely know that alcohol, *plus* other factors—one of the most important of which is underfeeding—may produce such conditions, but we are certainly not in a position to assert that alcohol alone is responsible for these diseases. Medical men are perfectly well aware of the fact that overfeeding and under- and improper feeding are accountable for far more misery and suffering than drink causes.

In order to arrive at some conclusion with regard to the effects of the addition of a small amount of alcohol to the dietary, the writer carried out some experiments to test the relative digestion time of a simple meal consumed, in one case with milk, and

in the other with beer. The menu was as follows in the two cases :—

Sandwich of scraped lean ham and white bread,
Glass of skim milk (ten ounces).

Sandwich of scraped lean ham with white bread,
Glass of Fuerstenberg beer (alcoholic strength
approximately 4 per cent.) (ten ounces).

The heat value of the two menus was approximately the same, that of the first being about twenty calories higher. The nutritive value of the milk menu was also somewhat higher than that of the beer diet. The tests were made on different days and under identical conditions, the stomach contents being examined four hours after the meal had been eaten. In the first case it was found that the meal was not yet digested ; in the second digestion was almost complete. While personal idiosyncrasy and individual capacity for one or other diet may have affected the result, the test seems to prove that the beer diet was more easily digestible than the milk. A similar series of experiments carried on with a milk and fruit diet, in comparison with a plain diet with light wines, showed clearly that, under certain conditions, the addition of a moderate quantity of alcohol appears to aid digestion.

Among dieticians there is naturally, in view of the contradictory opinions expressed by scientists, a great diversity of opinion with regard to the use

of alcohol as a concomitant to meals. Some, like Platen, who attained a very respectable old age, warn against drinking wine at meals, but drink it a few hours after or before dinner. Similarly, Hildebrandt condemned the use of wine at table, while Erasmus was as strongly against water drinking at meals, holding that it unduly diluted the stomach contents. Avicenna favoured a moderate use of sweet wine at meals, and the School of Salerno agreed with him. In the majority of cases most dietetic authorities hold that only one wine should be drunk; the indiscriminate mixing of wines is a custom against which epicures have protested times without number. Walker, for example, held that champagne was the best wine to drink, and of all varieties he regarded the still as the most ideal—an opinion which is shared by many other writers on gastronomy. Johnson's dictum that claret was poor stuff and only suitable for boys, while the drink for heroes was whisky, is one which no gourmet will endorse, for whisky as a table drink has no aristological reputation at all. Those who wish a dry liquid of a higher alcoholic strength than the ordinary dry wines will find brandy-and-water a much more suitable table drink than diluted whisky, provided always that it is good brandy. The man who was able to "take his wine well" has always been esteemed, and numerous examples of heavy drinking, which will not have the approval of true students of dining, can be cited did space permit. Darius wished that his tomb might be

inscribed with the words, "He had always drunk well but never got drunk," and Cyrus is stated to have alleged as a proof of his superiority, mental and physical, that he was capable of drinking large quantities of wine without getting inebriated. But these examples of excesses over the wine-bowl have never been favoured by the deipnosophists, and Panard's verse exemplifies the general aversion in which the habitual toper is held by them:—

" Se piquer d'être grand buveur
Est un abus que je deplore ;
Fuyons ce titre peu flatteur,
C'est un honneur qui déshonore."

On the other hand, Rousseau and Montaigne praised wine, and Sylvius the anatomist regarded it as a vital fluid of which mankind could not get sufficient. Beranger sang bravely—

" Tandis que pur, et coup pour coup,
Pour ma santé je bois beaucoup,"

while Klopstock made an ode in praise of the Cape Constantia, the modern representative of the Trimma lauded by Athenæus. The great diversity of opinion with regard to the use of wine as a help in working is well illustrated in the custom of Æschylus, who drank wine before he sat down to write his plays, and of Demosthenes, who rigidly abstained from wine when he had to compose an oration. The curious reader will find many interesting details regarding wine

drinking and great drinkers in Henderson's admirable *History of Wines*.

Religious conventions with reference to drinking have always been based on the assumption that alcoholic liquors are in question. Although the more philosophic poets, like Lucretius, warned against the evils of intemperance, the priests in Italy and Greece drank as much as the laity, and only on certain occasions were they forbidden to touch wine. The augurs, before consulting the entrails of the victim, and on certain occasions during the year, had to abstain from drink and food. But, in general, no restriction was placed on the use of wine. The Christian Church followed this rule, and while warning against intemperance, as it warned against gluttony and other excesses of the flesh, laid down no specific prohibition. On the contrary, there are several passages in Scripture which are strong texts to be quoted against the teetotallers. The Oriental sects, again, made no conventional rules against the custom of wine-drinking, and it was left for Mohammed to formulate a definite prohibition which has been held as a canon of the Moslem faith ever since. Al Sahrestani, one of the ablest commentators of the Koran, is very firm on the point that Mohammed expressly prohibited the use of wine in any form, but other authorities do not agree with him with regard to the absolute negation of drinking implied in the texts quoted. Sale, in the illuminative preface to his translation of the Koran, sums up the

matter with impartial fairness, and his remarks may be quoted here. "The drinking of wine, under which name all sorts of strong and inebriating liquors are comprehended, is forbidden in the Koran in more places than one. Some, indeed, have imagined that excess therein is only forbidden, and that the moderate use of wine is allowed by two passages in the same book—('They will ask thee concerning wine and lots. Make answer: In both there is great sin, and also some things of use unto men, but their sinfulness is greater than their use.') And again in the sixteenth chapter: 'And of the fruits of palm trees and of grapes ye obtain inebriating drinks, and also good nourishment.') But the more received opinion is that to drink any strong liquors, either in a lesser quantity or in a greater, is absolutely unlawful; and although libertines indulge themselves in a common practice, yet the more conscientious are so strict, especially if they have performed the pilgrimage to Mecca, that they hold it unlawful not only to taste wine, but to press grapes for the making of it, to buy or to sell it, or even to maintain themselves with the money derived from such sale. The Persians, however, as well as the Turks, are very fond of wine, and if one asks them how it comes to pass that they venture to drink it when it is so directly forbidden by their religion, they answer that it is with them as with the Christians, whose religion prohibits drunkenness and whoredom as great sins, and who glory, notwithstanding, some in debauching girls and

married women, and others in drinking to excess."

Persia, indeed, has the reputation of being the cradle of the wine industry, for Jamshid, whose praises were sung by Omar, is the Oriental Bacchus, who first discovered the merits of the vine, and who called it, very truthfully if one is to believe modern fanatics, Zeher-e-Kooshun—the delightful poison. A great many quotations might be culled from the ancients in support of moderate wine drinking. When Seneca, who advised all philosophers to drink wine, was told that Cato had made a beast of himself with Chian wine, he replied: "Do you call that a vice? Rather prove drunkenness a virtue than that Cato is vicious!" Lucius Piso, who had the reputation of being a hard drinker, was esteemed one of the most level headed of men, and although frequently so drunk in the Senate that he had to be ignominiously carried home by his slaves, he was the trusted confidant of Tiberius.

The choice of the modern diner so far as wines are concerned is not an easy one, since he has so many varieties to choose from. Every one of these has something to be said in its favour, and probably individual taste is the final court of appeal, before which every other consideration will have to bow. Champagne and the sparkling wines should be well iced before being drunk. Their alcoholic content is relatively high, and a great deal of skill is needed in serving them. They should be opened just when

wanted, care being taken that the warm hand does not touch the bottle, which must be well wrapped up in a cool, moist napkin when a metal wine-holder is not obtainable. Champagne is an overrated wine, as most of the great epicures, from Talleyrand downwards, have pointed out, for it exhilarates only to depress subsequently. To enjoy it at its best it must be partaken of in sips and in small glasses, the essentials being quick and frequent serving. The old-fashioned conical glasses are far superior to the present flat ones, which permit the greater part of the bouquet to escape. The red wines need different treatment. Clarets, for instance, should be warmed and never heated, since coldness suppresses their bouquet. They are best kept in a warm room a few days before being required for the table. The custom of putting the bottle in lukewarm water only needs to be mentioned to be condemned. Rhine wines must be iced in summer. Italian wines are best served without any preparation and bear decanting well. What wines should be served at dinner is more or less a matter of convention and custom—things to which the true diner pays little attention, since he selects his wines to harmonise with the particular dish, or, better still, with the menu as a whole. For that reason two wines at a dinner of six courses are quite sufficient, and the consensus is in favour of claret and champagne. The light wines are admirable as an accompaniment with nearly every dish, and the delicate Styrian and Austrian wines, with their

wonderful aroma, deserve a greater popularity than they have obtained. The exquisite light wines of the Alpine valleys, supreme among which is the Valtellino, bear transportation badly (as do also the Rhine wines), and are tasted at their best in their native environment.

Children are best without alcohol in any form as habitual drink, but the modern fashion of keeping all wine from them is to be deprecated. It is far better to allow the child to become acquainted with the taste of wine and to make him sensible from the first of the importance of sobriety and moderation by example than to preach the evils of wine drinking without allowing him to form a standard for himself. The French custom, which allows children to drink wine, is one generally followed by the Latin nations, and it is a well-known fact that nowhere is drunkenness less common than in those countries where the children have been accustomed to the taste of the wine from early youth. An occasional glass of light wine at dinner can harm no child who is in normal health.

Cider and perry, both of which contain an appreciable quantity of alcohol, have lately come into their own again, mainly on account of the theory that their use is a prophylactic against gout. It is probably no such thing, and for a gouty person cider is hardly to be recommended as a habitual drink. Nevertheless, cider is an agreeable and refreshing beverage. The best is probably the Somerset-

shire variety, which is very low in alcoholic content. The Herefordshire and Devonshire ciders, and the French brands, are hardly inferior. Rhine cider is also excellent.

BEER is a standard drink which will probably maintain its position as the most universally consumed beverage so long as mankind has a thirst to quench. It was known to the ancient Egyptians and to the Greeks, though the knowledge of its brewing appears to have fallen into oblivion soon after the era of the Persian invasion, for Athenæus makes no mention of it. The Romans apparently did not know it, but gained the knowledge of its manufacture from the Gauls, who, as the historian narrates, were in the habit of spoiling their barley by converting it into a fermented drink. In the Middle Ages it was a well-known and highly popular drink, and regularly figured on the tables of the great as well as the poor. Always a cheap drink, it has been pre-eminently the wine of the people, and the consumption of beer, notwithstanding the energetic campaign against it on the part of the anti-alcoholic crusaders, has steadily risen. This is due to the excellence of the light beers which are now manufactured, and which are no longer surpassed by the best German and French beers. Good beer, of a light alcoholic strength, is almost an ideal beverage with a simple meal for those who like its taste. The slight amount of bitter that it contains is a direct digestive stimulant, and the small percentage of carbohydrate which it

possesses has a real food and fuel value. For table use the lagers are to be preferred : stout and bass are more alcoholic, but possess more food value. The objection to beer as a table drink is that it must be taken in relatively large quantities ; it is essentially a thirst quencher, and as such far preferable to the majority of aerated temperance drinks flavoured with essences and sweetened with saccharine. The following table gives the approximate alcoholic strength of various varieties of beer :—

ALCOHOLIC STRENGTH OF BEERS (GERARD)

<i>Bavarian beers—</i>	<i>English beers—</i>
Culmbach, 7.4.	Pale ale, 6.5.
Munich, 4.	Stout, 9.
<i>Belgian beers—</i>	English lager, 4.
Lambie, 5.9.	<i>Austrian beers—</i>
Faro, 4.9.	Lager, 4.
	<i>French beers—</i>
Lyons, 3.5.	Household, 3.

The stronger alcoholic liquids are used comparatively sparingly. Whisky and usquebaugh and diluted brandy are hardly table drinks. Where they are taken as such, special circumstances probably determine their use. On the other hand, the large class of liqueurs and dessert wines have a high reputation as concomitants to a well-ordered dinner. The ratafias are infused liqueurs, and as little-known

examples which are worth a trial we may mention the tarlufoglio which comes from Savoy, the marschino of Zara, the alkermes of Florence, the Van der Hum of the Cape, the Bologna rossolio, Venetian citronelle, the Dalmatian krambamboulie, and the varieties of crèmes whose number is legion. Some of these have a very high alcoholic content—as the eaux-de-vie kirchwasser, arrack, eaux-des-Creoles of Martinique ; others, like the crèmes of vanilla, peach, apricot, pine, cinnamon, and plum, a comparatively low one, though still much higher than even the strongest dessert wines. A few, like advokaat, are highly concentrated foods as well as being very delicately flavoured drinks. When well prepared and carefully selected, a liqueur is an admirable drink with which to complete a good dinner, and Moore's ecstasy over one variety has found expression in the Fudge Letters :—

“ A neat glass of *parfait d'amour*, which one sips
Just as if boiled velvet tripped over one's lips ! ”

Dessert wines are usually sweet and with a high percentage of alcohol. The only one commonly used in England is port, which, according to most gourmands, is one of the worst dessert wines it is possible to drink! Malaga was Talleyrand's favourite dessert wine, and most people who have tasted it in perfection will agree that it is hardly to be surpassed. But the king of dessert drinks is Tokay, though

Lunel, old Jerusalemer, and some of the sweet Canary and Cape wines are worth consideration. Age in a dessert wine is a point in its favour ; in other wines it is usually a point against their excellence, for table wine, after a certain number of years have passed over the cask, loses much of its flavour and delicacy. It is of course essential that the wine should be well matured, but, beyond that, age is of little value in improving its quality.

The other stimulating drinks which the diner has to consider are coffee and tea. The latter is of comparatively little importance, and the only gastronomes who have anything to say in its favour are the Russians, who are inordinately fond of this beverage. Taken some hours after dinner or some hours before, it is an agreeable beverage which has won for itself a well-established reputation in this country, but as a table drink its only defensible position is at the breakfast-table, and there only on sufferance. The quantity of tannin contained in a cup of tea is considerable, and its use should be avoided when protein food is eaten—especially meat proteins. The tea with the lowest tannin content is undoubtedly well-selected China, which is now relatively easy to obtain, though the best kinds still go to Russia ; prepared in the Chinese fashion, there is no objection to its use as a dinner beverage, for its tannin content is then very little above that of a mild Burgundy. The addition of milk, sugar, and cream to tea raises it at once to the rank of a food, and prepared in this manner

it is not only a stimulating but a nutritious beverage whose fuel value is relatively high.

Johnson's fondness for tea has often been cited; a more authoritative example is that of the great physician Boerhaave, who consumed on an average a hundred cups of this beverage daily. Lord Arlington was responsible for introducing tea into England in 1666, where it rapidly won public favour, although it has never reached the height of eminence as a drink which it has attained in Russia, where everything is flavoured with tea, and where there is even a favourite tea soup. Someone has said that there are three divinities devoutly worshipped in Russia—*tschai*, *tschin*, and *tschy* (tea, rank, and cabbage soup), and Von Vaerst, endorsing the statement, vouches for the enthusiasm with which each deity was adored, at least in pre-Soviet days!

Both tea and coffee contain the same stimulating principle—caffeine, which is a strong cardiac stimulant now much used as a drug. The quantity contained in a moderately sized cup of strong coffee is approximately four grains, or just below the average dose prescribed in medicine, and the habitual consumption of coffee may therefore be said to be an instance of drugging. Nevertheless, Voltaire's remark when someone pointed out to him that coffee was a slow poison, is apposite enough. The body soon becomes accustomed to a stimulant, and the constant ingestion of caffeine does not seem to have any effect upon coffee drinkers, although cases have been recorded

in which it gave rise to definite symptoms of disease both in them and in tea drinkers. Some authorities hold that coffee drinking is conducive to long life, and certainly a glance at the list of friends of the coffee-pot who have attained a very high age lends support to that theory. Fontenelle, who drank several quarts of coffee a day, reached the age of one hundred years, another great coffee drinker died at the age of ninety-nine, and many instances of coffee drinkers who have attained ninety years may be cited. The Arabian term, *kahweh*, from which coffee is derived, means strong, and is a suitable appellation for the drink. The first coffee-house in London was established under Cromwell by a refugee Turk, but at that time the drink was already well known in Europe, since it had reached Venice during the time of the Crusades. In the seventeenth century coffee drinking became general in France, owing to the splendid coffee-parties which Soliman Aga, the Turkish Ambassador, gave at his house. During the French campaign in Russia, coffee was extensively used by the soldiers. Von Vaerst mentions the fact that those who drank coffee were much more able to support the fatigue of that terrible campaign than those who did not drink the beverage, which is easily accounted for when one remembers that the stimulant it contains is one of the most powerful known to us.

The preparation of coffee demands a great deal of care and attention. The prevailing mistake is to make it very much too strong, and to roast the beans

unequally. Probably the best coffee is served in Austria, where the Turkish method has been modified in an excellent fashion. Everyone who pays some attention to the selection of the raw coffee, to its proper roasting, subsequent pounding (grinding is hardly so good) and decocting, will be in a position to brew an excellent cup of coffee. Ideally, the beans ought to be roasted when required, and carefully placed in a napkin until they are cool; then they are pounded in a mortar, and placed in the pot and boiling water is poured on to them. The French method à *Dubelloy* is another excellent way of preparing the drink. In this the decoction is strained off the grounds, boiled, and again poured over the grounds, a tablespoonful of coffee being allowed for each person. "The best coffee," wrote Von Vaerst, "is sold in London, and the worst coffee in the world is drunk there. As it is made there it really deserves the condemnation of the Puritan preacher who describes it as a base, black, thick, nasty, bitter, stinking variety of puddle water!"

Suitably prepared and served as the last course of a dinner, coffee is a drink which has found enthusiastic supporters among all classes of gastrosophs. It may be partaken of pure or with sugar and cream; the addition of the latter substances makes it a valuable food, which has the added property of being stimulating in a high degree. There is no reason to suppose that it either interferes with or aids digestion.

The consumption of tea has prodigiously increased

per head of population during the past fifty years, and it is to-day probably the most universally consumed of all beverages that are drunk at a temperature higher than the natural heat of the body. The last word on its composition and physiological effects will be found in the "Report on the Clinical and Laboratory Investigations on Tea" issued by the International Tea Market Expansion Board in 1934. Therein is shown that the carminative and other effects of tea, and, above all, its flavour, are to be ascribed to its caffeine and tannin content, and to certain volatile oils, present in very small quantities, whose effects upon the human organism are still matters of investigation. A moderately prolonged infusion of any kind of tea contains about two grains of caffeine per cup, and about the same amount of tannin. The tannin is always promptly and effectively neutralised by the addition of milk, but even without such neutralisation it serves a useful physiological purpose, as it stimulates gastric secretion, which in turn, through its acidity, counteracts the effects of the tannin upon any food that is ingested. The tannin of tea is altogether different from the tannin of many other substances, and may even have a beneficial action upon certain food-stuffs quite different from the hardening effects of tannic acid. The consensus of opinion is that tea drinking is not injurious to digestion, provided the tea is properly infused and a good blend is used. An immoderate use of tea is just as harmful as the immoderate use of any other drink,

inasmuch as it overloads the digestive apparatus with a solution, however mild, of an alkaloid that has to be broken up before it can be utilised by the tissues.

Cocoa and chocolate are never served at dinner, and are breakfast beverages *par excellence*. Cocoa contains a stimulating alkaloid, and also a considerable amount of food material ; it has a higher food value than either coffee or tea. Prepared after the fashion in which it was served by the ancient Aztecs—beaten to a cream with the addition of milk and eggs—it is a highly concentrated food. Served, as it often is, with cream or sugar and made with milk, its food value is equally high. As a stimulating beverage it ranks below coffee or tea ; but it is easily digested, and its agreeable taste and the variety of ways in which it can be served have made it a favourite in many places.

Little need be said about the other vegetable extracts which are used as beverages. Paraguay tea or Jesuit tea, and camomile tea, are both excellent stimulants, but somewhat insipid to the taste. The Sultan's tea, which used to be sold at such an expensive figure at Constantinople, is equally insipid, and owes its food value entirely to the cream with which it is served. The ghoo which is used by the African natives is, however, a food in itself, since it contains a fairly high percentage of both proteins and carbohydrates. It has an agreeable flavour when well made, and by some people is preferred to coffee. All these drinks can be made with milk instead of water, in

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which their food value is higher, although their stimulating effect is decreased.

The following table gives the food values of some of the beverages just referred to :—

Name of Beverage.	Protein.	Fat.	Carbo- hydrate.	Salts.	Fuel Value per pounds
Cocoa (Fry's) . . .	19.70	25.60	49.20	5.90	495.6
Nibs	13.20	50.40	6.30	2.70	547.9
Van Houten's . . .	20.50	28.0	39.70	8.80	507.4
Coffee	11.20	13.60	6.0	4.50	196.9
Tea	17.90	...	2.60	6.30	90.0

(From Van Noorden.)

CHAPTER VIII

THE PREPARATION OF FOOD

“The cook—if he is a good cook—is a divine being!”—VOLTAIRE.

THE ordinary processes employed in the kitchen may be divided into those in which heat in some form or other is used, and those in which the articles are prepared without the employment of heat; the one may be said to be cooking in the real sense of the term, while the other is more properly styled preparation or preserving.

Among the former are roasting, boiling, frying, grilling, toasting, steaming, baking, stewing, digesting, and their various modifications. All these processes demand care and attention on the part of the cook. The utmost cleanliness, together with the minimum amount of handling the food, should be insisted upon. Cleanliness is nowhere more important than in the preparation of food intended for human consumption, and the acme of attention to this detail can only be given in a kitchen where everything is duly arranged so as to ensure thoroughness and efficiency. The various methods of preparation by heat have two main objects in view: the one to render the food

more palatable and to give to it a flavour different from that possessed by the raw material, and at the same time to destroy any germs; the other to make the food more digestible.

The difficulty—one might almost say, the impossibility—of obtaining raw food in a state of purity is too well known to need demonstrating. Although it is possible, by inspection and careful selection, to avoid buying meat which is tainted with disease, or vegetables which are undergoing decomposition, there are certain organisms and moulds which the average buyer cannot detect and against which he therefore cannot guard. These are all capable of being destroyed by the processes to which the food is subjected in the kitchen before it appears on the table. The meat of animals which have died of anthrax or glanders is eaten by some natives after it has been carefully boiled, and does not seem to affect the consumers injuriously. While no one would argue that diseased meat should be rendered fit for consumption by sterilisation or designed preparation—as is done in some parts of the Continent under Government supervision—this instance may be adduced to show in what manner careful preparation can safeguard the individual from the effects of eating contaminated meat or food of any kind. The best way of destroying the harmful additions to raw food-stuffs which present conditions confer upon them is by cooking. An exposure to heat sufficient to prepare the food for the table is usually effective in

killing any harmful organisms that may be present in the raw material. For example, it is probable that a larger amount of tuberculous meat is consumed than the public thinks, but the culinary processes to which such meat is subjected before it is consumed are more or less effective safeguards in preventing the community from suffering through such consumption. Where raw meat is desired, of course, the greatest care must be taken to ensure that it is absolutely above suspicion.

Probably the most common process of preparing food by heat is **BOILING**. In this the meat is subjected to the action of water which is heated to the boiling point. The proper way of boiling such a simple article of diet as a leg of mutton has been much discussed. The consensus is that the meat should be immersed for a few minutes into boiling water, and then taken out and placed in a saucepan of lukewarm water which is gradually brought up to the boiling point and allowed to simmer over the fire until the meat is done. The preliminary immersion in boiling water coagulates the surface protein; it forms an outside casing which keeps in the juices of the meat when the saucepan is subsequently placed over the fire and allowed to simmer. Otherwise, if the meat is placed in cold water and slowly heated, the juices escape into the water and the result is a more or less strong broth, while the meat itself is rendered hard and sapless. When broth is wanted, however, it is desirable to cut up the meat into small cubes and

simmer it slowly, as this extracts the maximum value from the food.

Cooking, to be efficacious, must be done slowly with just sufficient water to cover the food; an iron saucepan, tinned inside, is the best apparatus to use, and the fire must be steady without being fierce; simmering, and not actually boiling, must be aimed at, and all scum carefully removed. The general rule is to allow fifteen minutes to every pound of meat; thus, a joint weighing eight pounds will need two hours to be properly boiled. Vegetables demand extra care in boiling, in order to ensure that they keep their colour and consistency; the addition of alkalies to green vegetables, to preserve the colour when boiled, is entirely unnecessary and interferes with the taste.

There are so many varieties of boilerettes and of apparatus to lessen the cook's labour on the market that it is impossible to deal with them all. Without depreciating the value of other patents, it may be stated that the well-known Welbank Boilerette answers all purposes required in the most admirable fashion. But the reader has a wide range of selection, and it is only necessary to mention here the excellent bainmarie, the German cooking pots, the Warren patent, and the double pot apparatus which is now so extensively employed. There is the same variety in ovens and other cooking apparatus. All that may be said is that, whichever of these numerous models is selected, care must be taken

that its working is properly understood, that it is kept in order, and that it is methodically cleaned after use.

With regard to the kind of heat used, individual taste and convenience must determine this question. Gas cooking is perhaps the most generally desirable, since it is clean, economical, and thoroughly satisfactory, so long as the essential of cleanliness is kept in view. The coal fire is equally useful, but needs more care and is more difficult to regulate. A wood fire is desirable for certain dishes, especially for grilling, and a charcoal fire is regarded as indispensable by some cooks for the proper preparation of certain dishes—notably kabobs.

A prolonged trial of cooking by electric heating has convinced me that, notwithstanding the vaunted excellencies of this method of cooking food, it leaves much to be desired, and is in no way to be preferred to cooking over a charcoal, coal or gas fire. To begin with, equable heating on an electric stove can only be obtained when the surface of the bottom of the pot or saucepan is in exact apposition to the heated surface of the stove. Even then there is noticeable a marked inequality in the distribution of heat, due, probably, to differences in the conductivity of the metal. Cooking on an electric stove is clean, simple, and pleasant, but it does not produce the best results, although it serves very well for heating soups, milk, preparing coffee, and for minor culinary operations. Where an ordinary coal stove, or a gas stove, can be used, the cook would do

well to stick to it, no matter how alluring are the advertisements extolling the merits of electric cookers. When one comes to study the finer shades of cooking, a comparison between the results obtained on a gas stove with those obtainable on an electric stove is a convincing proof that the former gives better and more appetising effects, especially where meats and egg dishes are concerned.

The electric oven is perhaps less objectionable, for its heat is evenly distributed, and though its desiccating properties are still very evident, they do not matter so much, except in the preparation of the more delicate soufflés. Another point against cooking by electricity is the uncertainty attendant upon it; the apparatus may refuse to function at the precise moment when a most important culinary operation is in course of being perfected and may hopelessly spoil it. I may be singularly unfortunate, but my experience of cooking by electricity has not been such as to induce me to recommend that method in preference to the older and more dependable methods.

Cooking by steam is possible in large establishments, where, indeed, it is an administrative necessity. But the results obtained by such mass production compare most unfavourably with ordinary cooking, as anyone who has had experience of the cookery on large ocean liners can testify. These bad results are not, however, ascribable to the method, but to the carelessness in applying it. Steam cookery is theoretic-

cally ideal; one can adjust the temperature to a nicety, and for the choice cooking of fresh vegetables, fish, and starchy substances no better method can be used. But in its application more care and attention are needed than in ordinary cooking, for it is relatively easy to overcook by it with disastrous results to flavour and consistency of the food-stuffs submitted to it.

A great deal has been heard of paper-bag cooking, a method, however, which is by no means novel. Cambacérès cooked his mushrooms in capsules of greased paper, and Macrobius mentions the custom of cooking fish in cabbage leaves which were sewn up and exposed to heat in an iron pot or oven. Leaf cookery is well known among semi-civilised nations; and the excellent method of cooking game by enveloping it in a layer of moist clay which is subsequently heated to a high temperature between the coals is one with which every gipsying Nature lover is acquainted. Paper-bag cookery preserves the natural juices and flavour of the food, allows of an even and regular action of the heat upon it, and prevents undue evaporation.

The essence of success in all cooking is evenness of temperature and absence of hurry. Slow cooking, with few exceptions, should be the rule. This is especially necessary in the variations of the boiling process—though no less indispensable in boiling itself—such as steaming, digesting, and stewing. Steaming, in which the food is allowed to cook in the

minimum amount of water, and practically, in fact, in its own moisture, is best for fish, white meats, and vegetables, though it can be used for all kinds of food. Prepared in this way, the food is succulent and easily digestible, and the smallest amount of nourishment is lost. The saucepan, preferably a shallow one, should be well covered, and the process is best performed in a vessel which has a water jacket attached so that the temperature can be easily regulated. When the heat is applied in the form of steam, and the food is cooked without the addition of water, simply in its own moisture, the result is excellent, especially in the case of vegetables.

Digesting is another variation. In this process the food is placed in a saucepan, heated to the boiling point, and simmered for a couple of hours; it is then withdrawn from the fire and allowed to cool, and the process of heating and cooling alternately is continued until the food is ready for the table. Vegetables treated in this fashion, usually with the addition of fats, such as butter, are excellent. Cardinal du Prat, who was renowned for the excellence of his dinners, availed himself extensively of this method, especially in the preparation of spinach. The dish of spinach, which was an invariable accompaniment of his Friday dinner, was cooked on the Monday morning and set aside till the Tuesday; then it was placed on the fire with the addition of a small lump of butter and again cooked; and the process was repeated every day

until Friday, when the dish was brought smoking hot to the table.

Prolonged digestion is also admirable for the hard, leguminous vegetables, which are decidedly improved by it. It is really another method of stewing, in which the food is allowed to simmer in its own juice, or in the additions—in the shape of wine, vinegar, broth, or whatever may be used—that are made to it, for a variable period. Stewed meat, vegetables, and fruit are usually very tender, well cooked, and highly nutritious, but great care must be taken to preserve the shape of the solid constituents and to prevent the escape of flavour by evaporation. For that reason the heat should be less than in the other processes of boiling or steaming, and the vessel in which the food is cooked should be kept closed. “Smothering” and braising, which are variations of digestion, are excellent for both meats and vegetables.

Etymologists are still undecided about the derivation of the term “roasting,” which Boxhornius alleged was from an Armorican root, while Lezius tells us it comes direct from the old Teutonic. About its meaning all authorities are agreed.

By Roasting we understand subjecting the food, whether animal or vegetable, to the direct action of heat, and preventing undue desiccation by frequently basting it either with a fat or with moisture of some sort. The process, so far as meats are concerned, is generally done on a spit, and the meat is basted with

the gravy that results or with butter ; but it may be equally well done in a shallow saucepan, provided the food is regularly turned so that every part gets the full benefit of the heat. A good roaster is born, remarks an authority ; a good cook can be made. English cooks have generally been esteemed as roasters, and there is no doubt that they do excel in this branch of the art, though Cardinal Campeggio's opinion that they have no equals in the world in roasting venison is probably a mild exaggeration, since roasting is well understood by Oriental cooks, as anyone who has tasted a roast lamb stuffed with pomegranates and prepared by a Persian chef can vouch.

The essentials of roasting are a brisk, steady, clear fire, and the avoidance of extremes, for the meat must be neither underdone nor overdone. Here again the rule is to allow fifteen minutes for every pound of meat ; a high temperature must be avoided, since it tends to dry the surface of the meat unduly and to burn the osmazone—the technical name for the congealed and browned albuminoids that form on the surface and that give the peculiar flavour, so well appreciated in cracknel, to roast meat. A high temperature is not necessary, and anyone who has had practical experience in roasting will know how easy it is to burn the meat when the fire is too hot and unevenly distributed. When game or poultry is roasted, special care must be taken in basting ; if the roast is larded, the bacon, or whatever form of larding is employed, must be perfectly fresh,

since the slightest rancid taste is accentuated by roasting.

Grilling, broiling, and baking are variants of roasting in which the food is subjected to heat without extra care being taken to avoid loss of moisture by basting. In grilling a comparatively high temperature is desirable, so that the outside of the meat may be well done while the inside is just cooked. A grill or gridiron is necessary, but in default of it hot stones serve admirably. Baking, a method that serves equally well for vegetables as for meats, stands in the same relation to roasting proper as stewing does to boiling. The action of the heat here is more slow, and generally the outside of the food is better cooked than the inside. Baking under hot ash is almost an ideal way of slow cooking.

Toasting is a modified form of grilling which is generally employed in dealing with vegetable foods such as bread and the like, and needs no further description.

Frying, properly speaking, consists in subjecting the food to the action, momentarily, of superheated fat. In order to do it efficiently the saucepan must be filled with fat or oil which must be heated considerably above boiling point, and the food which it is proposed to fry must be well dried, and plunged into this boiling medium and kept there for a short period. Vegetables as well as meats may be done in this way. The more common—and entirely wrong—method is to put some fat in a saucepan and to place the food in this,

cover the dish, and allow it to "fry"; this is not frying, but a mixture of stewing and roasting which renders the food sodden and prevents the fat from giving it that crispness which is the sign of well-fried food. It is essential that the fat employed should be of a high temperature, and it may be used over and over again, provided that no heavily flavoured foods are fried in the same fat.

There are innumerable modifications of these processes which do not strictly fall under the category of any of them, though they are analogous to several. An omelet is not fried, but we miss a proper appellation to describe the manner in which it is prepared. Similarly we have no name for the method used in America in preparing those excellent dishes which figure on the menu as "planked this or that." By "planking" is generally meant the roasting of a meat dish on a piece of greenwood which is liberally oiled beforehand and heated over a wood fire. Meat prepared in this way has a specially bland flavour, which is heightened by the peculiar aroma imparted to it by the sap of the board on which it has been planked. In the preparation of these dishes the Americans excel, and it is difficult for an English cook, who does not possess the maple planks, to equal their efforts. A trial may be made with an oak or elm plank, and those who have not tried this method are recommended to experiment with it; the results to be obtained with a little care are really astonishingly good. The plank may be used over

and over again, if care is taken to grease or oil it well, and not only meat but fish and venison may be prepared in this way.

The preparation of food without the use of heat serves, in many ways, the same ends as the methods just described. It is necessary sometimes to remove poisonous and undesirable qualities of food by washing, drying, or exposure to the air. A preliminary boiling—as in the case of asparagus or bracken fronds—usually suffices, but in other cases the same object is attained by allowing the food to lie in running water, which carries off the poison in solution. For example, the fruit of a species of Protea (*Brabeum stellatifolium*), which is extensively consumed both as coffee and as food in South Africa under the name of ghoo-beans, contains a powerful poison, prussic acid. This is removed by prolonged washing, or by desiccation, and further roasting. The concomitants added to food-stuffs to preserve them are similarly removed—as, for instance, the salt from salted fish—by subjecting them to the action of water. The chief methods of preparing food without the use of heat are found in the various ways of serving raw meats and vegetables. The former are scraped, minced, or pounded; the latter sliced, freed from husks and hard parts, and dressed with various condiments and flavouring agents to form salads. Preparation without heat, it may be said, is, with the exception of the processes just mentioned, limited to improving the appearance and taste of the raw

materials; it has comparatively little value in eliminating organic contamination. Freezing, which is legitimately classed under this heading, does not kill the bacteria found in food, and is therefore no safeguard against the presence of such organisms. It enables the cook, however, to furnish a variety of dishes for the table in a manner which he would not have been able to do were he deprived of this method as an aid. Blanching, scalding, and pickling are more properly semi-heat methods, and cannot be classed under the "cool" modes of preparation. The latter improve the digestibility of raw and cooked foods by helping the consumer to masticate them, and by presenting them in an appetising and palatable food, and often, as in the case of salads, by adding to them substances which enhance their dietetic value.

The art of preserving food is a very ancient one, dating back farther than the sister art of cooking. Probably the first attempts to preserve food, especially vegetable substances, were endeavours to imitate the natural process of desiccation which some fruits and seeds undergo. Sun-dried vegetables and juicy fruits are still esteemed as the best, perhaps because the rays of the sun mellow and improve the quality of the fruit without altering, as artificial heat is likely to do, the chemical composition of the fruit acids and sugars. Desiccation is still one of the most effectual means of preserving food. It is employed in the preparation of certain animal foods, such as dried

meat, pemmican, biltong, Finland tongue, and goose-flesh. In most of these cases dry heat is the only preservative used, but sometimes the meat is flavoured and the process of desiccation is hastened by employing certain adjuncts of which saltpetre is the best known. The essentials in preserving food by desiccation consist in allowing the heat to affect the whole volume of the food slowly and equally, preserving a full draught to carry off the moisture that is extracted, and to hasten in some degree the drying. Unless the desiccation is quickly and evenly done, there is a chance that the interior parts of the food may be unaffected and decompose or ferment. When choosing a food which has been preserved by desiccation, care should be taken to see that the deeper parts are sound and as well preserved as the surface. Generally speaking, such preserved food is more concentrated and therefore more valuable, pound for pound, than when fresh, and is especially suitable when a high-protein food is wanted.

Food is also preserved by artificial methods of drying, of which the best are vacuum drying and drying in a current of hot air. These methods, however, are not so advantageous from a purely gustatory point of view, since they tend to deprive the food of much of its flavour, or, at all events, to rob it of more of its flavour than the natural desiccation does.

The ancients preserved meat by coating it with

honey (Apicius, *De Arte Coq.*, Lib. I.), or with any substance that prevented the access of air. After all, the main intention in preserving food is to stop or avoid decomposition, and anything that will effect that purpose, and at the same time leave the food fit for human consumption, may therefore be employed. In modern times, when the antiseptic value of certain reagents and certain methods is well understood, advantage is taken of this to prevent the decomposition that results from the action of bacteria upon the food, either in the shape of fermentation or actual breaking up of the constituents. Steam, hot air, freezing, and simple sealing in tins which are more or less air free—or at least free from air that contains bacteria, are all employed for this purpose, and the immense variety of tinned, desiccated, and sterilised foods on the market bears witness to the development of these methods. When the preservative process has been conscientiously and efficiently performed, such food is quite suitable for consumption and available, in the majority of cases, in a cheap and economic condition. It is true the process of preservation interferes somewhat with the flavour of the food, but it does not spoil its nutritive value. Tinned and steam-preserved foods should be carefully tested before they are eaten. If there is any stale or musty smell, if the tin is blown up by gas, or if the food itself is sodden and powdery instead of being flaky and firm, it must be rejected. It is imperative also that such food must be turned out of the tin the moment

the latter has been opened, otherwise the natural juices may act on the metal and a certain amount of the latter may enter into solution. This is especially the case with acid vegetables and fruits, such as tomatoes and guavas. When well-known brands, prepared by careful makers who exercise cleanliness and a proper selection, are chosen, there is little likelihood that the food will be bad, and the manufacturer's name is often a very good criterion of the good quality of the food.

Another way of preserving food is to add to it, or immerse it in, certain chemicals which prevent fermentation and act as antiseptics. The choice of such agents is comparatively limited. Nearly all strong chemicals prevent decomposition, either temporarily or permanently, but only a few can be employed with safety, since the majority of antiseptics are also poisons. For practical purposes, the only ones available are sugar, common salt, oil, and alcoholic liquids. To this list one may add boracic acid, a small percentage of which is probably harmless when consumed with the food, though its use as a food preservative is to be deprecated. The main thing to be considered in selecting such preserved foods is whether the preservative has been employed to prevent the food from getting bad, or merely to arrest incipient decomposition. In the latter case, if the preservative has been used to mask decomposition which has already taken place, the food is unfit for use and should be avoided. In the former, the use

of preservative is legitimate, and may, under certain conditions, add to the digestibility and quality of the food.

Sugar is used both in the state of powder—as in temporarily preserving fish—and in strong solution, when its action, if care is taken to prevent fermentation, is much more efficacious. The former method is very rarely used; the latter, on the contrary, is extensively employed in the preservation of fruits—as jams and preserves—either in syrups or by crystallisation in which desiccation is an added factor in enabling the food to keep. Such foods are generally wholesome, since they have a high meat value and tend to bring out the flavour of the articles preserved in a marked degree. The point to bear in mind is that they are exceedingly liable to undergo alcoholic fermentation unless care is taken to exclude the air, and to boil them for a sufficiently long time to give the syrup a chance of percolating through the fibres of the fruit.

Salt is used either in the solid form or as a strong brine, and is an excellent preservative, although its use renders the food less digestible owing to the fact that it hardens the albuminous substances. The addition of a little sugar in the pickling, as this method of preservation is called, is an advantage in many cases; saltpetre is sometimes added to give the requisite tinge of lilac red to preserved pickled meats. Salted foods generally require to be well washed in water before they can be cooked; when eaten raw,

they are indigestible unless scraped or finely divided.

Alcoholic solutions are employed for the preservation of both vegetable and animal foods, and may be used for the preservation of sweet fruits as well. They tend to harden the albuminates in a certain degree, but probably not so much as brine does ; but food preserved in alcohol or vinegar is generally less easily digestible than when cooked or raw. When solutions of strong alcoholic percentage are employed, the food may be preserved almost indefinitely—as in the case of cherries preserved in liqueurs or fruits preserved in brandy ; where the percentage of alcohol in the preserving solution is slight, the food must be excluded from the air else fermentation or decomposition is apt to set in.

Oil acts as a preservative by excluding the air and thereby interfering with the action of decomposing bacteria. It has little or no action upon the constituents of the food itself, and foods preserved in oil have a high nutritive value owing to the fact that the preservative employed is itself a food. Such foods are therefore more rich and possess a greater heat value than foods preserved by any other method. The method can, however, only be used for meats and fish and for a few vegetables. The best example is the homely sardine, which is a very valuable article of diet, and, in general, one of the safest and most economical of preserved foods on the market. When the oil is deficient in quality or quantity, it may

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induce decomposition not only in the food but in the preserving medium ; the former then gets unfit for consumption and the latter becomes rancid. The smell and appearance of such ill-preserved foods will usually be sufficient to warn the consumer against them.

CHAPTER IX

THE ART OF DINING

“To dine well needs study and care . . . it is an art which no philosopher need despise.”—MARQUIS DE CUSSY.

LOVE and hunger, as Schiller somewhere remarks, hold the world together, and if we want further evidence of the absorbing interest which food and its consumption have had for mankind, we have only to glance through the works of some of the most thoughtful and least sensuous writers. Novalis defined eating as “accentuated life.” Jacob Böhme dealt with the same subject in his aphorisms. Anthus, in his monograph on *Gastronomy*, carefully studied the subject from all points of view. “A human being eats as a human being ought to eat,” he considered, “only when he consumes proper and carefully selected products of nature and art in the requisite quantities and combination, at the proper times, in moderation, with enjoyment, at ease and in a subjectively and objectively agreeable and tasty manner.” Yet there has been a prevalent notion that eating is not a fit subject for a man to devote his attention to. Johnson scorned the notion, and Byron exercised his wit at its expense, but nevertheless it has not yet been

eradicated. The Spartans demanded the exile of Naucrides, who was guilty of writing a treatise on the art of dining on the spare and ill-combined dietary of his country; Pope Hadrian VI., notwithstanding the fact that he himself was so inordinately fond of whiting that the price of that fish was raised twenty per cent. during his pontificate in Rome, thought it necessary to fulminate against the increased attention to the art which the luxurious epicurean ways of his predecessor Leo X. had made fashionable. The Puritans, at the time of the Rump Parliament, inveighed against the godlessness of devoting attention to the pleasures of the table, and to-day there is a section of the community that has not yet grasped the fact that a proper attention to dietetics is commendable in anyone who wishes to preserve his health.

This tendency to disapprove of the serious consideration of a serious subject is probably due to the abuse of dining which unfortunately has called for a definite distinction between the various classes of diners. The ancients were sinners against the principle of moderation just as much as the moderns are, but their customs with regard to times of meals and the manner of serving them have an important bearing on our own. Before dealing with the essentials, when the chief meal should be taken and how it is to be served, it is well to recall certain facts from ancient history bearing on these points.

The Greeks made their principal meal in the late afternoon. They began the day with a sort of

breakfast, which consisted of bread or some wheat dish accompanied by sweet wine—an admirable dietary for the climate and conditions under which they lived. Probably at midday they had a collation of further farinaceous food, mixed with a certain amount of animal food. The principal meal was served later on in the day, and consisted essentially of two courses, which, owing to the variety of the ingredients and the various methods of preparing them, could be regarded as two distinct meals. The Greek dinner was consumed at leisure and occupied on an average about an hour and a half; the banquet described by Athenæus probably lasted three hours. Among the Romans the principal meal was again deferred until late in the afternoon. The Greek *akratisma*, or breakfast, was kept up by the Romans as a meal of light articles of diet—chiefly fruit and farinaceous courses washed down with wine; the second meal (called by the Greeks *ariston*, from the fact that it was largely composed of home-made dishes which were accounted the best) became the principal meal, corresponding to the Greek dinner, or *deipnon*, while the supper, or *ophollon*, was merged into the dinner. In Plutarch's time the breakfast was a mere "quick lunch"—a *geuma* or tasting, but much more time was consumed over the other meals.

In the Middle Ages the art of dining, so highly cultivated by the Roman epicures, sank for a time until it was restored to its high level by the great cooks at the court of Charlemagne. The Carlovingian

dinner consisted of four courses, an egg dish, followed by game or fish, farinaceous food, a roast, and dessert, and occupied about an hour when it was partaken of in state. At a later period the set dinner was prolonged, so that it approached to the length which was fashionable in Roman times. Dr Mouffet states that when he accompanied the Garter mission to the King of Denmark, he had to sit for eight hours at table, since the average length of a Danish dinner at that period was well over four hours. Switrigalus of Lithuania, who began his dinner at four o'clock in the afternoon, finished it at half-past ten in the evening. The inordinate length of present-day city dinners is probably a relic of this custom.

As a broad generalisation, it may be stated that the chief meal of the day, the dinner *par excellence*, should be reserved until it can be partaken of at leisure and in comfort. Climatic and other considerations may make it desirable to have dinner in the middle of the day, but more usually the late afternoon or the early part of the evening is preferable. The body is then in a fit state to receive the comparatively large amount of nutriment which the consumption of an average-sized meal offers, and although, as has already been stated, physical work immediately after a meal does not necessarily interfere with digestion, most people would prefer to be undisturbed after their dinner, and to enjoy a respite from work while they are digesting it. The chief consideration here is comfort and convenience, and these two factors

will also regulate the length of time given to the meal. An ordinary meal of, say, five courses, can be disposed of, even when the dishes are consumed with the utmost leisure, within an hour and a half; and it is a safe rule that no such dinner should last longer, though, of course, additional time may be given for the dessert. A quicker rate of eating, on the other hand, predisposes to imperfect mastication and enjoyment of the food, and it is imperative that the principal, or any meal, should not be hurried. On the Continent the hour prescribed for the dinner, unless it is partaken of in the middle of the day, is generally earlier than in England. In Holland, five o'clock is still the rule, except at restaurants and hotels, where the general custom of having the dinner served at six is followed. In Germany and Switzerland half-past five is more common. In Italy and Russia the dining hour is later. In nearly every country three meals are the rule. In England and America breakfast is considered of almost equal importance with dinner. The American breakfast especially used to be singularly elaborate, but is now much simpler. On the Continent, as is well known, breakfast more nearly approaches the "tasting" described by Plutarch. Whether, after dinner, it is advisable to take a fourth meal in the shape of supper, is a matter which each individual must decide according to his own dietetic requirements. Generally speaking, the supper may be dispensed with if the dinner has been taken in the evening. If supper

is taken it must be of the simplest kind. Where the dinner has been scrappy or hurried, supper is almost a necessity, and the "theatre supper" is therefore a meal which has some justification. Even in that case, simplicity and the avoidance of heavy foods must be adhered to if the individual desires to benefit by it.

The subject of dining has been the theme of much discussion, and the literature which deals with it has grown proportionately. Yet there is scope for further investigation and debate, and more especially for information, regarding the comparative value of different ways of dining. Instructive and interesting hints are to be derived from the customs which prevail in other countries, and the vagaries of mankind when partaking of food have been excellently described by the elder D'Israeli in his *Curiosities of Literature*.

Is it better to eat alone or in company? The solitary diner is usually a glutton or a misanthrope—or a friend-forsaken person who is much to be pitied. A few savage races consider the act of eating a strictly private function to which a certain amount of decent secrecy attaches. These, however, are the exceptions, for the majority of mankind delights in a proper sociability when the dining hour arrives, although there is a small class of ultra-refined gastronomers who hold that for the adequate enjoyment of a dinner the diner should be undisturbed by company and should feast alone. We may at once dismiss this verdict as an example of the hyper-cultivation of deipnosophy which is not likely to win popularity.

Dining in solitary state is sometimes unavoidable, and in these circumstances the diner must put up with it. Probably he loses nothing, so far as the value of what he consumes is concerned, by eating alone, although there is a certain amount of reason in the supposition that a cheerful table-companion lightens digestion. It is equally probable that solitary meditation while eating a meal is not conducive to good digestion. The solitary diner would therefore do well to occupy himself in some way while he dines. When dining in state, conventions do not permit him to talk to the waiters, but this is one of the absurd customs with which mankind ought to break at the earliest opportunity, and even the dignity of J. M. Barrie's club waiter should not intimidate the lonely diner. There are, however, obvious difficulties in keeping up a conversation with a waiter, and these need not be detailed here. In the absence of any chance for talking, the diner should try to occupy his attention, in "the light and superficial manner" which Brillat-Savarin recommends, in some other way. Listening to the band is scarcely enough. In the first place, dining-music is rarely well chosen, even in the best restaurants. The programme is sometimes too little varied and includes too much classical music. However much the diner may appreciate fine compositions at any other time, he is scarcely in a position to do so when he is dining.

On the other hand, light, cheerful music is

undoubtedly a help, especially when it is played briskly, yet with sufficient moderation not to disturb the serenity of the meal and not to distract but to aid attention. Rossini, who was himself a very able cook and fully aware of the importance of these trifling details of the table, has composed some excellent table-music which may serve as a model for those who arrange the musical programme at dinners. Walker laid stress on the advisability of reintroducing the old fashion of vocal music at dinners—a custom which is kept up at some city dinners, although there it is generally reserved until the main part of the menu has been disposed of. The essentials in table-music are lightness, attractiveness, melody, and vivacity, and although music can never replace the delights of agreeable conversation by those who know how to converse, and the equally agreeable art of listening by those who know how to listen, it may prove of value when the diner is forced to dine alone.

The question of reading at meals has been much discussed. Physiologists generally assert, on purely physiological grounds, that it is wrong to read at meals; but here again the solitary diner will find that the perusal of light literature, which can be assimilated without putting too great a strain on the mental faculties, is a distinct advantage, since it keeps the mind from occupying itself with extraneous thoughts while at the same time it does not interfere with a due appreciation of the dishes. When reading serves

only to "prevent the waste of time" which some people complain of in regard to a meal, it is not to be commended. The hurried bolting of a heavy breakfast while the attention is occupied with the share list of the morning paper or with the parliamentary reports, is provocative of subsequent gastric as well as intellectual indigestion, and is a crime of which no gastrosophist should be guilty.

The gastrosoph will, however, endeavour to dine in company whenever possible. An agreeable companion on the road, as the old classic tag states, is as good as a coach, and similar company at a meal affords a relish which cannot well be missed by those who have the opportunity to avail themselves of it. We therefore come to the important question of sociability at dinner. How many persons should be at table has been a problem on which the authorities have differed according to their individual preferences. The old Romans declared that a dinner-party should never be fewer in number than the Graces and never more than the Muses, and the consensus of opinion supports that rule. Walker, in his *Aristology*, remarks that there are three kinds of dinners—solitary dinners, everyday social dinners, and set dinners, and lays stress on the fact, well known to dieticians, that solitude tends to promote thought, and thought tends to interfere with the digestive powers. Most authorities think a round dozen at table too large, and that the ideal is eight at the most, and preferably six. Walker justly condemns the method of inviting strangers

to make up the party; the absurdities of conventional dinners, with their formality and want of harmony; and the labour of promoting geniality in a company which, as is so often the case in set dinners, is under a certain amount of conventional restraint.

The ideal dinner, then, is destined for a party of six. It is served in a well but most unostentatiously furnished dining-room, and it is important to bear in mind that the environment of the diners is a matter which is deserving of the attention of the host. The temperature of the room should be agreeable, neither too hot nor too cold. In winter the fire should be brisk and cheerful, and so arranged that it will not need replenishing during the dinner or that it will inconvenience any of the guests. It must be laid and lighted some time before the dinner is to be served, in order that the room may be appropriately warmed by the time the dinner is ready. In summer the problem of temperature is more difficult to solve. Wherever possible the meal should be partaken of in the open air, and it is desirable to follow the Continental and American custom of serving meals on the balcony or in a roof-garden. Where the means to do so is wanting, care must be taken to have the dining-room well ventilated, so that there is no stuffiness due to the exhalations from the dishes and the radiated warmth of the diners. Various methods may be employed to cool the air; a large jar of ice, concealed by foliage and flowers, in one of the corners;

a revolving fan, placed where it is least likely to interfere with anybody's comfort, and a proper adjustment of windows and doors so that while there is plenty of fresh air no draughts are created, are all at the disposal of those who desire to make the temperature pleasant and agreeable. Another important matter is the lighting of the room. The ideal way is to have a diffused light, so arranged that it adequately illumines the table and the guests without unduly obtruding itself upon the attention of the diners—light, as Walker remarks, with the least perception whence it comes. An overhead electric or gas light, suitably screened, is probably the best; if lights are actually placed on the table itself, the greatest care is necessary to prevent them from inconveniencing the diners and interfering with the free exchange of conversation across the table. A multitude of table-lamps, or a heavy centre-light with an imposing art screen, is unnecessary and irritating in the majority of cases.

The dinner-table itself demands some attention. The round table is an abomination which a stout diner will curse with justifiable freedom once he has been inveigled to sit at it. The ideal table is a narrow oblong one, not too wide to interfere with the easy exchange of courtesies between opposite guests. The majority of dining-tables of to-day are made too wide, so that a vast expanse of napery or wood stretches between the diners, necessitating loudness of speech and an extra expenditure of energy when

these courtesies are paid. For a similar reason, anything that interferes with a free view across the table should be dispensed with. There is no need for elaborate epergnes and centre-pieces ; whatever floral decoration is necessary—and no one will contend that an artistic disposal of flowers and foliage does not add to the beauty of a well-laid dining-table—can be so arranged that it does not interfere with the view. Low bowls of glass or china, filled with cut flowers and leaves, or the latter themselves arranged on the tablecloth in some artistic pattern, are the best. The table appliances should be considered in the same manner. No guest ought to be inconvenienced by having to wait for the necessary condiments to be passed round to him in state. A carefully planned arrangement of small cruets, each holding the various more commonly required relishes, should be provided, so that every guest may help himself and his neighbour as he pleases. It is needless to say that everything provided should be of the best quality and scrupulously clean. That does not mean that only the most expensive articles of table-ware must be used ; the commonest, so long as common is not a synonym for inferiority, serve equally well. What is meant is that no useless articles must be provided. The knives must have cutting edges, but must not be ground down to a razor edge ; the forks must be capable of piercing the food, and the spoons of being used as spoons and not merely as ladles. Silver, on account of its decided superiority over tin or nickel,

is the most desirable metal for forks and spoons; German silver, however, serves equally well and is much less expensive. The knife-handles should be white and without cracks or blemish, and these instruments must not be too heavy—a matter to which cutlers may well direct their attention in the future.

Equally important is the glass-ware. A plain glass service is preferable to one that is elaborately cut and etched; the rims of the tumblers and wine-glasses must be thin and preferably straight, since a thick, serrated, or wavy edge, such as is sometimes met with, interferes considerably with the pleasure of the diner in drinking. On the whole, a pure white glass is the most to be desired; tinted glass, especially of a light amber colour, is very attractive, but the arrangement of colours on a dining-table is a matter that demands the utmost discrimination and good taste, and the average diner will do well to eschew any experiments and content himself with the simplicity and purity of uncoloured glass-ware. Finger-bowls are useless encumbrances in an age when no diner thinks of handling his meat. *Rince-bouches*, which used to be common in the early Victorian period, are now fortunately so rare that few people know what they are; their presence at table is a sign of barbarism which no diner should tolerate. Similarly, the plates and dishes should be unostentatious, at least, so far as the first courses are concerned. Even in dessert plates, a wealth of decorative tracery and figuring

offends the eye and the taste alike. A plain white service, with a gold or coloured border, is the best; if greater decorative effect is desired, it must be carefully studied, and some variation of the old-fashioned willow-pattern service will probably be found the most pleasing and the most generally satisfactory. Finally, the chairs provided should be comfortable and roomy, and—a point of special importance—adapted to the size of the guests who are to sit on them. Nothing is more unpleasant than for a long-legged individual to sit on a low chair so that he has to cramp his legs underneath his seat, or for any individual to sit on a small chair with a hard, straight back that digs against his spine and unfeelingly reminds him of the time when he squirmed on a school bench.

The waiting at table is another point to which the host should direct his attention. The ideal dinner is served without waiters, who, as most gastronomists agree, interfere with the general harmony of the feast by their presence and evolutions. Each course is brought in, placed on the table, and cleared away when it is finished, the attendants being only present when it is brought in and removed. Nothing distracts the attention and disturbs the placidity and comfort of the diner more than the attentions of solicitous waiters who hover round and vex him when he wishes to talk. The silent, quiet waiter, who is there when he is wanted and only then, is a rarity seldom to be met

with. On board ship, where the well-trained steward supplies his place, waiting is generally well done, but at the average private dinner, which is not of the set variety, it is usually execrable. "The only convenient way is to have everything that is wanted actually on the table at the same time, and let the guests assist one another. This alone is undisturbed and visible comfort." It is imperative that the articles most commonly wanted should be easy of access by everyone at table. Bread, perhaps, is the most important. At present it is the custom to provide each guest with a roll or slice of bread which is placed in the napkin, and afterwards by the side of the plate; when a further portion is wanted, this is handed round by the waiter. How much better, as Walker remarks, would it be to provide a plain silver dish containing appropriate-sized portions of both brown and white bread, with a silver fork, placed conveniently in the centre of the table, from which each guest can help himself as he pleases! The arrangement whereby the host summons the waiters when their presence is necessary to remove plates and dishes, by means of an electric bell which can be pressed with the foot, is admirable, and deserves to be more popular than it is. Another point on which gastrosophs lay stress is the dispensing of wine. At present, the butler goes round and questions each guest in an undertone with regard to his choice of wine. Apart altogether from the fact that the whispered conversation is disturbing to the other diners,

and should for that reason alone be avoided, this arrangement, even when the waiter is most attentive and solicitous for the comfort of the guest, entails a modicum of inconvenience upon the diner. The old fashion of having carafes of wine placed conveniently on the table, so that each guest may help his partner and himself, is much to be preferred. With its decay the courteous fashion of "taking wine with one's neighbour"—the fashion that Byron eulogised and that Cambacérès extolled as one of the chivalries of dining—has fallen into desuetude, and along with it the host of other little pleasant attentions which made the old-fashioned dinner, notwithstanding its conventionalities and stilted forms, so pleasant a ceremony to many of us.

The most important matter in connection with dining is naturally the ordering of the dinner itself. "To order dinner well is a matter of convention and combination. It involves novelty, simplicity, and taste, whereas in the generality of dinners there is no character but that of dull routine. . . . Where the materials and the cooking are both of the best, and the dinner is served according to the most approved rules of comfort, the plainer, cheaper food has attractions which are seldom to be found in the most laboured attempts. . . . Most people mistake the doctrine of variation in their mode of living. They have great variety at the same meals and a great sameness at different meals."

"If a master of a feast wishes his party to succeed,"

writes Walker, "he must know how to command, and not let his guests run riot each according to his own fancy." "Celui qui reçoit ses amis et ne donne aucun coin personnel au repas," remarks Brillat-Savarin, "n'est digne d'avoir amis!" And the aphorisms of the Marquis de Cussy and of Talleyrand, both ideal hosts themselves, are similarly definite. The host must pay attention to the composition of the menu; he must give his personal care to ensure that the arrangement of the dishes is effective, that the wines are properly served, and that the guests are comfortable and can obtain what they want. It is only by attending to details—details of waiting, of cooking, of selection of table company, and of the proper environment in which the meal is served—that success can be ensured.

The problem of ordering dinner brings us to the bill of fare. A discussion of this extensive subject, on which volumes have been written, demands more time and space than can be given to it here, and once more we must content ourselves with sketching the essentials and leaving the reader to fill in the details. Such elaboration is comparatively easy with the assistance of the host of good cookery books, ancient and modern, special and general, that are available. One of the best of the more modern compilations, which is not so well known as it deserves to be, is Herr von Malortie's elaborate monograph, *Das Menu*, which gives several hundred typical menus, suitable for all classes of dinners

and for every period of the year, together with bills of fare of historical interest and a volume of useful recipes explaining how the rarer dishes may be prepared. The custom of setting forth the order of dishes and their names on a table card—the menu, Speisezettel, or bill of fare—is not a modern one, though like so many other dietetic customs it has been revived and popularised in modern times. The ancient Romans had a list of viands which was read out to the guests, and the menus that have been handed down to us from the time of Frederick the Great, Maria Theresa, Queen Anne, and the earlier part of the nineteenth century show that the custom was followed long before it became common in France, where in the middle of the last century the menu was firmly established. In England, at least, so far as private and unceremonial dinners were concerned, it only became general in the early 'seventies, and Walker's remarks prove that it was not universally followed even then. To-day it is an indispensable adjunct to every set dinner, and even in family dinners it is customary to write out a menu so that each guest can see what awaits him and make his preparations accordingly.

According to the best authorities, the ideal menu must combine simplicity with effectiveness. The age has passed—let us trust never to return!—when twenty or more dishes figured on it. This execrable custom is still kept up at large set dinners, though even there no such superabundance of good things prevails

as at the historic dinners given by the Court in the early Victorian epoch. The coronation dinners of the Georges were gargantuan repasts in which quantity of food and a multitude of dishes were deemed sufficient to compensate for quality and choice of preparation, but the same accusation cannot be levelled against the large set dinners prepared by the great cooks. These, notwithstanding the number of dishes and the length of the wine list, were well thought out and admirably combined efforts to display their imaginative powers and their fine skill in assisting the taste of the diners.

An average set dinner may conveniently be arranged in the following manner :—

Potage.
 Hors-d'œuvre.
 Relevé de poisson.
 Relevé de boucherie.
 Entrée chaude.
 Entrée froide.
 Rôt ; compote ; salade.
 Entremets (a) Légumes.
 (b) Sucres.
 Beurre et fromage.
 Glaces.
 Dessert et fruits.
 Café et liqueurs.

This is a dinner of twelve courses, and more than this no man can legitimately desire. Already, from

a dietetic point of view, the quantity of food, even when the diner is very moderate and consumes only a small portion of every dish, is far beyond the needs of the body, and the habitual eating of twelve-course dinners would inevitably lead to overfeeding, with its generally attendant bad results. The above menu may be conveniently simplified, without material loss of enjoyment, by deleting from it the *hors-d'œuvre*, one of the *relevés* and *entrées*, and perhaps the dessert, though on the last point authorities differ. It must be mentioned in passing that the term *hors-d'œuvre*, as used above does not correspond to what is usually known as such. It means a prepared dish, usually croquettes of animal or vegetable substances, which cannot conveniently be classed as an *entrée* or *relevé*. The *hors-d'œuvres* given before the soups, as is now fashionable, are in the nature of the *Vorspeise*, *primæ mensæ*, or *sasuska*, and are taken from the Russians. In the Roman dinner the guests were served, before partaking of the main meal, with various highly spiced tit-bits to while away the time between their arrival and the serving of the dinner proper. In Scandinavia the *sasuska* consists of an assortment of pungent side dishes such as caviare, salted and marinated herrings, slices of spiced ham, game, and preserved meats, vegetable and meat salads, and small pasties, with which it is the invariable custom to drink a small glass of some fiery alcoholic liquid such as vodka, kirsch, or cognac. The modern custom of serving sardines, herrings, radishes, and

other kickshaws, all incorrectly classed as *hors-d'œuvres*, is merely an imitation of this fashion, and the diner would do well to protest against it, as also against the habit, introduced from America, of taking a cocktail before a meal. Such are all supposed to be helpful in stimulating the digestive functions. The assumption in a sense is true, but the stimulation is far too great and spoils the appetite, while at the same time it dulls the palate and makes the consumer insensible or indifferent to the fineness and delicacy of the succeeding dishes. The proper stimulant with which to commence a dinner is a plate of good soup. It is a nourishing, easily assimilated, and highly appetising stimulant, and, provided it is not unduly flavoured and that discrimination is made in the selection of a proper quantity and quality, it is an ideal commencement.

A study of the menus given by the various authorities will show that in nearly every case the principles of variety and combination are kept in view. Walker's ideal dinner served for a party of eight on Christmas day was as follows :—

Turtle soup (Punch).
 Whitebait (Champagne).
 Roast grouse. French beans (Claret).
 Apple fritter and jelly (Port).
 Ices.
 Fruit.
 Coffee and liqueurs.

With the turtle, cayenne and lemons cut in halves, not in quarters, were served; the punch and champagne were iced, and, as a matter of fact, the only wines really drunk were claret and champagne. To this menu there is hardly an objection. Walker's editor eliminates the punch, which he holds is "certainly too strong and tasteful with turtle soup, and is a barbarous and old-fashioned drink!"—an opinion with which I do not agree, although it is quite true that more than one glass of this liquid spoils the taste for other wines. The objection, that the dinner is not a Christmas dinner since goose and plum pudding do not figure on the menu, may be disregarded. The ideal dinner should be arranged according to the season of the year and the taste of the diners, and not according to convention founded on the traditional assumption that certain dishes must necessarily appear on it. A more legitimate objection is that the selection of whitebait as the fish course in December is a mistake, since the fish is not then at its best. The food value of such a dinner as this is comparatively high, and on the assumption that every diner consumed an ordinary helping, Walker's guests got too much protein and fat, and too little carbohydrate in proportion.

Walker's Temple dinner, arranged for six guests, is equally admirable:—

Spring soup from Birch's on Cornhill.

Boiled turbot with lobster sauce.

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Cucumber and new potatoes.

Roast ribs of beef.

French beans and salad.

Dressed crab.

Jelly.

Oranges and biscuits.

Anchovy toast.

Wines—Champagne, Claret, Port.

The selection of a well-dressed crab to follow the joint is an admirable innovation which ought to be more generally imitated. It is entirely a convention that fish should follow the soup. There is no special reason why the fish course should not be served later on in the dinner, always bearing in mind that the more delicately flavoured dishes should precede the more strongly tasting ones. This dinner is a good example of a simple, well-selected menu, and the limited choice of the wines is specially to be noted.

His Athenæum dinner for two is still more simple :—

Small oysters with lemon juice.

Flounders water zoutcheed (Sherry).

Roast grouse with French beans (Claret).

Coffee.

The following is a Christmas menu drawn up by Malortie. It is much more elaborate, and the food value, assuming that the diner partakes of

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every dish, is needlessly high. The wines served with it were Champagne, Bordeaux, Rhine wine, and Muscat.

Potage à la Regence.

Croquettes de ris de veau à l'espagnole.

Truite saumonée au bleu, sauce hollandaise et tartare.

Poitrine de bœuf à la Sainte Manehould.

Filets de volaille au suprême aux truffes.

Hure du sanglier farcie en bordure de gelée, sauce Cumberland.

Dindon rôti.

Compote ; salade.

Fonds d'artichauts, sauce au beurre.

Bombe à la Altenbourge.

Dessert. Fruits. Café. Liqueurs.

An interesting savants' dinner menu may be given here, both as an example of careful selection and as an instance of how the simplest dishes may be pedantically obscured. The classical scholar will have no difficulty in detecting the plum-pudding and the boar's cutlets, but the average diner would probably feel somewhat at a loss to know which is which !

Convivium festivum.

Conspectus ciborium.

PROMULSIS.

Pastita carne delicatissima condita.

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FERCULA.

Dorsum taurinum cum oleribus variis more
topiariæ.

Caput vitulinum gustum testudinum præbens.
Farinarium delectamentis variis ornatum, cum jure
ferventis more Britanico.

Assum aprinum, lactuca fructusque conditi.

MENSÆ SECUNDÆ.

Butyrum casusque.

Obsonium dulce.

Fructus.

Vina spumosa. Vinum ex vinetis
Castelli Margalensis.

The proportionate percentage of proteins in this dinner is inordinately high, but there is a good proportion of carbohydrates, and on the whole, from a purely dietetic point of view, the dinner is an excellent one, although two of the courses demand a healthy digestion !

At most set dinners the amount of all food constituents is far above the requirements of the average diner. It is recorded that at one of Chesterfield's suppers a guest found one of the soups so much to his liking that he consumed several plates of it, and then went steadily through with the other broths on the menu. The case is paralleled by the chaplain of the Old Bailey, who, as Hayward asserts, was in the habit of dining with the judges at three, and five

o'clock, and consuming both dinners without missing a single course. He did this for ten years at a stretch, and declared that he suffered no ill results from it. The "healthy appetite" which is still to be found among habitués of the city dinners, where the menus are as varied and as elaborate as was the custom in the Prince Regent's time, is a further example of "adaptation to opportunity."

As a set-off to these rather substantial menus, we may give the following plainer compositions, which are excellent from every point of view:—

Dinner at a Prague Restaurant.

Nockerl soup.

Boiled trout with melted butter.

Potatoes plain boiled.

Paprika chicken with endive salad and mirabelle compote.

Kaiserschmarren.

Coffee and liqueur.

Only one wine was served, a white Voslauer.

Dinner at a Dalmatian Restaurant.

Fish soup (Jerusalem wine).

Fried gherkins and young gourds.

Roast mutton with creamed potatoes.

Compote (Moscata Rosa)

Granite of fruit syrup.

Dessert. Coffee. Liqueurs.

Dinner in Holland.

White wine soup.
Boiled halibut and tartare sauce.
Salmi of game.
Mutton cutlets. Compote.
Vermicelli pudding with fruit sauce.
Dessert. Coffee.

Semi-Vegetarian Dinner (Cologne Restaurant).

Milk and egg soup (slightly sweetened).
Baked cucumbers, stuffed with bread and cheese.
Stewed spinach with cream sauce.
Asparagus with mayonnaise sauce.
Macedoine of fruit.
Coffee.

Another Vegetarian Dinner.

Red wine soup.
Fried bananas with poached eggs.
Curried potatoes with white rice.
Tomato salad.
Cabinet pudding.
Fonds d'artichauts with Parmesan cheese.
Coffee.

Another and more purely Vegetarian Dinner.

Chestnut purée.
Frittura of beans and potatoes (young).
Compote.
Stewed boletus (mushroom) with toasted bread.
Vegetable jelly.
Peaches in syrup. Fruit salad.

These three vegetarian dinners all contain sufficient protein and carbohydrates, but nearly everyone has too much fat. They are all examples of simple vegetable menus, and their composition may be varied extensively, although it is obvious that the range of flavouring is limited, especially in a pure vegetable diet where neither cheese nor milk can be used.

As examples of some interesting but little-known menus we may give the following, which are more or less typical of the diets of the countries whence they hail. For the first I am indebted to my friend, Dr Andre, the explorer of the Orinoco hinterland :—

Family Dinner in Trinidad.

Mangrove oysters served on ice with pepper-vinegar and limes.

Purée of lentils with toasted bread.

Boiled red snapper with mayonnaise sauce.

Blue crab farci.

Stewed lappe served with akee.

Avocado salad.

Morocoy with pigeon peas.

Coconut ice.

Guava preserve and cream.

Dessert.

Cheese.

Coffee. Liqueurs.

The mangrove oyster is one of the finest of the oyster class, and is brought in direct from the swamps with the bivalves still clinging to the root, and opened

fresh for the table. The pepper-vinegar must also be freshly made. The blue crab is a species of land crab which needs special preparation. The crabs are kept in a "crabbery" which is attached to the kitchen, and are fed on a special diet in which capsicums enter largely. At the end of a month they are fit for the table. The crab is boiled and the flesh from its big claws and legs carefully removed, the shells being kept. This flesh is then fried, after being mixed with breadcrumbs and spices, and the farci thus prepared is replaced in the empty shell, in which it is served up. Lappe is the Creole name for the pacca (*Cælogenys pacca*), a species of *agouti*, which is one of the most succulent morsels of game that any gourmand can wish for. Akee is the boiled fruit of *Blighia sapida*, and is an excellent vegetable to accompany the game dish when plainly boiled in milk. Morocoy is a land-tortoise (the Brazilian tortoise, *Testudo tabulata*), the preparation of which is very elaborate, since it must be stewed in Bordeaux wine with spices. The liver of this animal is highly esteemed and surpasses in flavour the best qualities of *foie gras*. Pigeon peas are derived from an Indian shrub, and replace in Trinidad the ordinary young new peas. Coconut ice as prepared in the West Indies is a delicacy which no one who has only tasted the imitations made on this side of the Atlantic can presume to know the full value of. It is prepared from the milk and jelly found in the tender young nut, which are boiled and mixed with cream and then

slowly frozen. Guava preserve is obtainable in England, and, served with cream, is an admirable dessert dish. The cheese figuring on this menu is the flaky *queso de mano* which comes from Venezuela, and which has a mild and agreeable flavour.

Dinner served at a South African farmhouse.

Bean soup.

Bredie of tomatoes and mutton.

Soesaties with sweet pilau.

Beetroot salad.

Roast francolin partridge.

Stewed sweet potatoes.

Stewed fruit.

Coffee.

The bean soup demands no special description. The bredie corresponds very closely to the olla as served in Oporto and Andalusia. Its basis is a good meat stew, with which is incorporated peeled tomatoes and certain spices. The whole is carefully "smothered" for several hours at a simmer, so that the meat, which is cut into small portions, is thoroughly impregnated with the tomato flavour, and the dish as it finally appears on the table is of an even red colour. Usually rice—not boiled in the Oriental fashion, but made into a more cohesive mass—is served with it. Soesaties are small bits of mutton and pork which have been laid in a pickle composed of coriander seeds, allspice, laurel leaves, and various other spices, including curry powder,

onions, and vinegar for several days. When the meat has been well pickled it is taken out of the liquid and strung on tiny bamboo skewers, which are grilled over a sharp fire. The pickle, well boiled, is served with it in a separate dish. This, like the pilau, is an Indian dish, but has become thoroughly naturalised at the Cape. The pilau is rice, slightly sweetened, coloured yellow by the addition of turmeric, and mixed with raisins. It is an admirable accompaniment to the rather sharp flavour of the curried kabobs. The beetroot salad is made with boiled beets sliced thinly and dressed with vinegar and salt; oil hardly ever enters into the dressing, but the dish is ornamented with slices of hard-boiled egg. The sweet potatoes are stewed with the addition of sugar and cinnamon, and is really an *entremet* and not to be considered as a vegetable dish pure and simple, although it is taken with the roast. The stewed fruit is prepared from sun-dried peaches, peeled, with the addition of wine, sugar, and a small portion of tangerine peel, which helps to bring out the exquisite flavour of the fruit done in this way.

French cookery has now won such a firm and, on the whole, well-deserved reputation, that we are apt to overlook the fact that other nations possess an almost equally excellent style of cooking. The delicacy of flavouring and the consummate skill which are so apparent in well-made French dishes are due to the care habitually exercised in the kitchen. French cookery possesses a definite "style" of its

own, but it is not an inimitable style, and it is no longer true that "On ne sait manger qu'en France." It is a common mistake to judge the cooking of a country or a nation by the food which is served in its restaurants. As a matter of common knowledge, the best national cookery is found not in the eating-houses, however excellent they may be, but at the tables of the middle class, the professional men, and the merchants. At the large restaurants of every European country French cookery prevails; the chefs are French cooks who do not fully understand the manner of preparing the national dishes. There are of course exceptions. One cannot get better national dishes than at some of the restaurants at Budapest, Trieste, Seville, and Cracow, but one has to ask for them specially, since they do not always figure on the menu. At a Moscow hotel the diner used to have the choice of various *potages*, *consommés*, and *purées*, but he had to give special directions if he wanted a *rossolnik*, a *stchy*, or a *bortsch*. At Lisbon, similarly, he could get an endless variety of *entrées*, but to obtain a good *gaspacho*, an eatable *arroz à la Valenciana*, or a digestible *puchero*, he must have had the good fortune to be invited to a private family dinner where these dishes were found in perfection.

French cookery is so well known that I need not deal with it here. German cookery, on the other hand, is comparatively unfamiliar to the average Englishman, but is certainly deserving of consideration. The Germans excel in the preparation of certain

vegetable dishes; their sausages and meats are invariably excellent. The opinion expressed by Kirwan—that every German dish that is not sour is greasy—is easily confuted by anyone who has had some experience of dining in the Fatherland. In general, however, the flavouring of the made dishes is too strong and coarse for English palates, especially when they are used to the refinements of the French school. In the cooking of milk dishes and the preparation of farinaceous foods the French cooks have still something to learn, and, although it may sound heresy to say so, they may instructively accept a hint or two from the German housewife. Family cookery, on the whole, is far better understood in Germany and Austria than in this country; there is much less waste and far greater variety.

The Dutch school is distinctive by its treatment of soups, and the Dutch fish broths are justly esteemed for their delicacy of flavour.

Russian cookery is even less well known than Dutch and French, notwithstanding the fact that we have naturalised the Russian way of serving dinner. The fermented broths do not attract at first taste, but those who have sampled them more than once soon grow to like the piquancy which the slight souring of the vegetables imparts to the liquid. Bortsch served with cream is one of the finest soups that man ever invented, though from a dietetic point of view the addition of the cream is perhaps to be deprecated, although from a purely gastronomic it is indispensable to bring out the

full flavour. Bohemian, Austrian, Hungarian, and Polish dishes have merits of their own, and some of them are unsurpassed in quality. The national flavouring agent, the red bean, imparts a distinctive taste to some of these dishes which no other agent can give. Paprika carp, paprika chicken, and paprika game are delicacies on which the recollection of the diner dwells lovingly after he has dined off them. The Mediterranean countries excel in the preparation of fried dishes; the use of oil, which is never stinted and is of the best quality, usually facilitates the employment of this method, and the vegetable fritturas and frittatas can be obtained nowhere so excellently prepared as in Italy, Dalmatia, and some parts of Spain—notably at Barcelona. Probably the best centre for the gourmand who desires to experiment with southern cookery is Bayonne. Here, at one or two of the restaurants, one can obtain the best dishes of the Basques—the succulent ortolan and *cuissees d'oie*, the tasty and crisp sardine, fresh from the sea and daintily fried in olive oil, and the excellent game stews which are a delight to the diner. In Spain the much-maligned olla podrida deserves a better reputation than travellers have given it. When well prepared it rivals in flavour and quality the fine vegetable stews which are obtainable in Turkey. Much of the Spanish national cookery is Oriental in character, due to the influence of the Moorish settlement. In Spain alone, for example, can one obtain decently prepared rice, with every grain in the dish a light golden colour and separate from its neighbour,

succulent yet not moist, and crisp without being hard.

Dominion cookery is, in general, merely English or Continental cookery varied by local conditions or taste. So far no Dominion has evolved any standard or special taste of its own, but none, too, has contracted bad dietetic habits. In Australia and in South Africa one notices a gradual, and perhaps traditional, inclination for tropical and sub-tropical dishes, with a more extended use of Far Eastern condiments. Canada is influenced by the U.S.A., while New Zealand has retained little of its purely vegetarian Maori cookery.

Modern American cookery is interesting, because its diversity gives it vehement advocates and equally vociferous detractors. Bogert in 1931 and Crowninshield in 1926 condemned American food habits as dietetic indiscretions in the worst taste. Overfeeding, overloading of the diet by protein food and "faddy" arrangement of the menus are perhaps the faults most often criticised. On the other hand, it is often noted that better-class Americans observe wherever possible the chief dietetics canons, pay attention to food values, give due credit to the vitamins in consuming orange and tomato juice, and appreciate good cookery. In the best American restaurants the food is as good as anywhere in the world, and its service and cooking leave little to be desired, while the list of typical American dishes contains several items that may be considered as real artistic combinations of flavours, such as planked fish, the chowder soups, shad roe, canvas-back duck, and the diamond-back terrapin.

CHAPTER X

FAMOUS DINERS AND THEIR COOKS

“ Je veux que le mort me frappe
Au milieu d'un grand repas,
Qu'on m'enterre sous la mappe
Entre quatres larges plats !
Et que sur ma tombe on mette
Cette court inscription :
' Ci-gît un gourmand poète
Mort d'une indigestion ! ' ”

ANONYMOUS.

BEN JONSON, in *The Staple of News*, extols the ideal cook in verses which, if they cannot claim to be poetical, at least possess the merit of being enthusiastic :—

“ Why, he's the man of men
For a professor ! He designes, he drawes,
He paints, he carves, he builds, he fortifies,
Makes citadels of curious fowls and fish.
Some he dry ditches, some moats round with broths,
Mounts marrow bones, cuts fifty-angled custards,
Rears bulwark pies, and for his outer works
He raiseth ramparts of immortal crust,
And teacheth all the tactics at one dinner—
What ranks, what files, to put his dishes in—
The whole art military ! Then he knows
The influence of the stars upon his meats,
And all their seasons, tempers, qualities,
And so to fit his relishes and sauces

He has Nature in a pot, 'bove all the chymists
 Or airy breathern of the rosy-cross !
 He is an architect, an engineer,
 A soldier, a physician, a philosopher,
 A general mathematician !”

This comprehensive estimate of the qualities that a cook must possess, and the attainments of which he must be a master, is not exaggerated. He must be a power in himself, able to satisfy the wants of his clients, and at the same time thoroughly well versed in the science and art of dietetics. It is no overdrawn statement which is made by Careme that a good cook is worth more to his master than an indifferent physician, for the former can avert ill health and the latter only tinker with it.

Probably the first book dealing with cooks and cookery of which we have any certain record is the *Hon Zo*, compiled in Chinese by the Emperor Shen-nung nearly 2800 years before the Christian era. In 2500 B.C. appeared various Chinese treatises on the art of preparing rice, the staple food of Orientals, and several hundred years later the elaborate Egyptian rules and maxims on diet of which we possess traces in the Ebers and other papyri. In 1880 B.C., when beer breweries were popular in Egypt under the third Sesostris, dietarians concerned themselves with the uses and abuses of this beverage. Mago of Carthage, who flourished in 550 B.C., wrote a book on viticulture and the uses of wine which later, by order of the Roman Senate, was translated into Latin. Herodotus

mentions the cookery books of the Scythians, and tells us that they gave directions for the manufacture of cheese and butter; but for the first European manual on dietetics, as now understood, we have to go back to the physician, Euryphon, who in 444 B.C. described dyspepsia and attributed a vast number of disorders to intemperance in diet. He was followed by Herodicos of Selymbia, by Hippocrates of Cos, whose work on *Dietetics* was for long a standard, by Diocles of Carystos, the founder of the humeral pathology, and an established authority on the subject of diet cures among the early physicians, and by a host of writers on dietetics, of whose works we know comparatively little, such as Glaucus the Locrian, Methecus, Dionysius, the two Heraclidæ of Syracuse, Agis, Epenetus, Hegesippus, Erasistratus, Criton, and Archytas, the inventor of a new method of preparing cheesecakes. Baton gives a list of the great Greek cooks, who were all freemen and enjoyed certain privileges, such as attending the sacrifices and slaughtering the victims. The curiosities of cookery at this age need for their due consideration a volume to themselves, but mention may be made of the great light of the ancient culinary world, the famous Anaxarches the Eudæmonian, whose banquets were a triumph of gastronomic ingenuity, and who carried the rules of kitchen hygiene so far that he ordered his baker to wear boiled gloves and an antiseptic mouthpiece when kneading dough! The Sybarites were not less renowned for their cookery than for

their elaboration of dress and refinements of habits. They allowed their cooks to patent new dishes, on which the inventor obtained royalties for one year from everyone who wished to taste them. Forced feeding of pigeons, ducks, and sucking-pigs—which the Greek gourmets loved as much as did Charles Lamb—is described by these old writers, and most of the modern inventions of the table can be traced, in the germ at least, back to the Grecian kitchens. The philosopher, the poet, the warrior, and the statesman were alike proud of devoting attention to the delicacies of the table, and the account that Athenæus gives of the dinner at the house of Laurentius shows well the elaborate manner in which these feasts were prepared and partaken of.

Among the early Romans cookery was held in equally high esteem, and their standard works—notably that of the famous Apicius, who established a cult in cookery which was centuries later to be satirised by Smollet—are still worth perusal. Ausonius sang the merits of oysters, Horace and Pliny of various kinds of fish, Ovid of geese, and Plautus of lamb. Fulvius Hortinus, who was apparently the first to feed snails on boiled milk, was deified as a reward for his fertility of invention. Celsus, the chamberlain and secretary of Tiberius, and the first of amateur medical men, devoted a volume to dietetics, and Cæsar, Alpinus, and Tacitus thought it worth their while to give interesting notes on diet in their works.

A study of the history of dietetics furnishes many brilliant examples of each of these three classes of gastronomes, the title gastronome being applicable to anyone "who eats with relish."

Archistratus of Syracuse wrote a poem on gastronomy, of which a few fragments have been handed down to literary posterity, and was ranked by his contemporaries as a great authority on the art of eating. He was particularly devoted to grasshopper larvæ, which he regarded as a great dainty—an opinion which is still held by some savage nations—and feasted on a kind of plum pudding which was known as *thrion*. He was of opinion that it was necessary to consume a certain amount of honey every day if one wished to attain long life, and pointed out that the Illyrians, who were great honey-eaters, lived longer than the Scythians, who were by no means fond of this "natural preserve." Apicius, whom Seneca mentions with profound disdain, has given his name to a system of gourmandising which has been abundantly satirised by succeeding generations. We know very little about him except that he invented sauces, was inordinately fond of crayfish, and spent huge sums and undertook extensive journeys to gratify his luxurious appetite. Montanus has greater claims to be considered a gourmet, for, according to Juvenal, his taste was so perfect that he could tell the habitat of an oyster at the first bite. Philoxenus, on the other hand, was frankly a gourmand, and expressed the

wish that he might have a crane's neck in order to taste his food for a longer period. He habitually ate the most pungently spiced dishes and drank the hottest liquids, so that his friends nicknamed him "The Oven." A contemporary, equally notorious for his excesses at the table, provided himself with a delicate "tongue glove" in order that his taste might not be interfered with when he wanted to eat hot dishes, a trick which Mouffet tells us was followed by "a Shropshire gentleman who had a nice taste and an agreeable manner." Antiphanes took delight in feeding pigs on various succulent dainties, and was a great lover of the Tromilican variety of cheese, which was esteemed the best kind in Greece. Philoxenus of Cythera had such a high reputation as an authority on taste that he was welcomed at every table, and he freely availed himself of this popularity to live at his neighbour's expense. His servant was sent round in the morning to inquire, diplomatically, who was giving a banquet, and, possessed of this knowledge, Philoxenus "dropped in" and invited himself to dinner. His advice, and the fact that he was an extremely genial conversationalist, made him welcome and nobody seems to have grudged him his free meals.

During the flourishing times of the Roman Empire, the art of dining reached its culminating point and then rapidly deteriorated. The dinner became a luxurious orgy, hosts vying with one another to rival

the emperor and the rich patricians who feasted regardless of expense. In this age of ostentatious luxury there were hardly any gourmets, certainly no gastrosophs, but very many gourmands. A dish was fashionable when it was rare and expensive, and was valued on account of its cost and not for its intrinsic taste. The pies made of nightingales' tongues must have been extremely flavourless and insipid, as may be judged from the fact that it was found necessary to render them palatable by the admixture of succulent jellied broths richly spiced. The feasts of Lucullus, Anthony, Enobarbus, Caligula, and, above all, of Vitellius, whose depraved taste Tacitus has rightly condemned, are matters of history. At one dinner for twelve guests Vitellius used 7000 birds and 2000 fishes—

“ Il se mettait à table au lever de l'aurore,
L'aurore en revenant l'y retrouvait encore.”

Claudius banqueted with prodigality, and Nero spent the modern equivalent of £20,000 on one banquet—a figure which Lucullus is said to have surpassed. Æsop feasted his guests on one occasion at the cost of £1000 per head, and the extravagant habit of grinding pearls and diamonds to a fine dust and then drinking it in wine was followed by several freak gourmands of the degenerate Roman period. The consul Quintus Hortensius wasted a fortune in forcibly feeding peacocks, a bird of which he was passionately fond. Mæcenas paid large sums for the

flesh of young asses fed on celery—a dish which went out of fashion until, some centuries later, Cardinal du Prat rediscovered the excellence of ass's steak. The piquancy which celery imparts to some meats is well known to those who have dined off celery-fed duckling. Caligula caused equally expensive dinners to be served up in honour of his horse Incitatus, while Geta ate his food in alphabetical order—a manner which would drive a modern cook to despair. All these eaters were gourmands, unworthy to be ranked among the elect, and their cases are only of interest to show in what manner unrestrained appetite, favoured with unlimited wealth, can vitiate human taste. The freak banquets of modern millionaires illustrate the same truth.

English cookery obtained some reputation during the Tudor period. Afterwards, chiefly owing to the austerities of the Puritan epoch, it fell on evil days, until in the reign of Queen Anne the influence of the French cooks brought about a revival. The plays of the period, notably those of Congreve, make mention of the pleasures of the table, and Anne's physician, Lister, translated Apicius, and may claim to have been the first medical man to draw attention to the value of Opsonins, though hardly in the modern interpretation of the term. Pope extolled the merits of a whole hog barbecued—that is stuffed, and boiled in Madeira wine—but was himself a simple diner, feasting mainly on gudgeons and flounders, boiled mutton, chicken, and figs and grapes—a diet which

is eminently suitable for a literary man ! Sybaritic table manners were introduced in Anne's reign, though they were to be surpassed at a later stage when the fashion of " piddling with an ortolan at Pontac's " was esteemed the height of bliss by the exquisites.

Lord Chesterfield's cook was La Chapelle, who wrote *The Modern Cook* and made a fortune. The Prince Regent was another supporter of the French system, and is mentioned by Careme as one of the few Englishmen who possessed a really refined palate. Johnson, notwithstanding his remarks to Boswell, was a great eater and not a wise one ; he was in the habit of consuming the most indigestible and the most coarsely flavoured foods, and on one occasion took three helpings of plum pudding which he liberally bedaubed with oyster sauce as a relish. He liked underdone pork, which he ate with bread crusts and washed down with whisky—surely the most unwise diet for a literary gentleman who claimed to be solicitously careful of his belly ! Byron, on the contrary, was a moderate eater and often dined on a few biscuits and a cup of tea, though he could cordially appreciate the merits of a well-prepared dinner and as cordially curse the want of one on occasion. The first Earl of Dudley was devotedly attached to apple pies ; whenever he accepted an invitation to dinner at a friend's house it was on the distinct understanding that his favourite dish should figure on the card, and he querulously refused to refer to it as apple tart on

the ground that tarts were always open and pies always closed pasties. Dining once with Count Esterhazy, he was informed that there was no apple pie, and during the whole of the dinner all that could be got out of his lordship was the plaintive remark: "God bless my soul! no apple pie! God bless my soul!" Canning and Fox were both epicures, and the former paid special attention to the wine list, always selecting a sweet champagne which he held to be the best liquor to drink at table, adding that the person who affected to prefer dry champagne to sweet was an unmitigated liar. In the early Victorian period the art of dining became more and more studied. The English aristocracy enticed the best French cooks by offering them salaries which, in comparison to what they could obtain in their native land, were regarded as princely. Jay, a pupil of Careme, came over to serve as cook to the Duke of Wellington, but threw up his position in disgust because the Duke was always late for dinner, and went back to France to work for a gourmet who paid him considerably less, but had the sense to esteem his art at its proper value. Careme himself, notwithstanding the excellent offers made to him by English noblemen, preferred to remain in France as cook to the Rothschild, and retired comparatively early, having made a moderate fortune by the sale of his books, which was augmented by the pension which his grateful master settled on him.

There are two books written by English gastronomers which are particularly worthy of the attention

of the reader who is further interested in the history of the art in England. One is Thomas Walker's *Aristology; or, the Art of Dining*, published by George Bell & Sons in 1881, but written as a series of essays in a little weekly, styled *The Original*, in 1835. Walker, who called dining "one of our most important temporal concerns," was a bachelor and an exponent of the simple style in gastronomics. The son of a Manchester manufacturer, he was born in 1784, graduated at Cambridge, and was called to the Bar in 1812. In 1829 he became Police Magistrate at Lambeth, and five years later he started his weekly, which came to an untimely end after twenty-nine numbers had been published, owing to his failing health. A year later he died. His maxims are carefully considered aphorisms, some of them borrowed from Brillat-Savarin, whose work he admired, but the majority derived from his own experience. He was in favour of a sane moderation and simplicity, and the rules he laid down in his series of well-written essays, which are liberally interspersed with anecdotes and informative details, are eminently fair and practicable and will appeal to every lover of good cheer. His remarks on the preparation of food and the choice of various dishes deserve to be more widely known than they apparently are. An edition of his works furnished another barrister, Thomas Hayward, Q.C., with a tag on which to hang a series of instructive essays on the art of dining contributed to the *Quarterly Review* and afterwards reprinted in

book form. Hayward's erudition and good sense are indisputable, but he did not approach the subject in the same spirit as Walker, and his comments are not always above criticism.

A much more complete epitome of the art, though not written in so discursive and instructive a fashion, is Kirwan's book *Host and Guest*. Kirwan had travelled extensively, and had enjoyed ample opportunity of comparing and contrasting the various methods of preparing food and serving dinner in different countries. His work is therefore very valuable, but its usefulness would have been enhanced if the author did not show such unmistakable proofs of certain insular prejudices which prevented him from appreciating to the full the excellent dishes which he tasted. His predilection for English food is unmistakable, but he is willing to admit that it could be improved and that in some matters English chefs have much to learn from the French. With regard to French cookery he has a particularly amusing paragraph which deserves quotation if only to show how different was his political standpoint from that which prevails in these days of the *entente* :—

“ Though personally no admirer of the French, of French manners or French morals, though I put no faith in French equality, abhor French centralisation, loathe from the very bottom of my heart French tyranny, and think that French military glory—which is but a velvety euphemism for French brigandage and French invasion—should be put down

by the comity of nations and the strong will and strong arm of all mankind, yet I am of opinion that there is much in the French kitchen which might be advantageously transplanted and successfully imitated in this country."

Notwithstanding Terence's dictum, "Coquina medicinæ famulatrix est," the medical faculty has not concerned itself with the art of cookery so much as it might have done. It is true, from the very earliest period the physicians have dealt with dietetics. Hippocrates' work, *De Dieta*, although assumed to be a spurious compilation by a Neoplatonist (Sprengel), is probably authentic in the main. In much later times, when it was esteemed no disgrace to a man to have with decency a distinguished palate, the profession deemed it wise to consider gastronomics in greater detail, and the wisdom of some of these medical epicures is an excellent proof of their common-sense, and, at the same time, of their culinary knowledge. "Study, my friend," writes one of them, "that which is good and pleases your palate. Commence a series of gastronomic experiments without infringing your regimen. You will be all the better for it. . . . Breakfast during July, August, and September on iced coffee, and in winter time on woodcock soup." Excellent advice so far as it goes, but the prescriber knew how to prepare iced coffee, and probably his modern colleagues do not. Galen protested against old cheese, which he considered almost a poison, and

a few other heresies have emanated from distinguished physicians ; but, on the whole, those who were " fine eaters " themselves were also willing to allow their patients to enjoy the pleasures of the table so long as restraint and moderation were companions at the feast. Abernethy's advice, " Live on sixpence a day and earn it," remains excellent to this day—with the proviso that the sixpence is reckoned by its modern monetary equivalent. Dr Corvisart, whose reputation as a physician time has not destroyed, was a great gourmand and was in the habit of scrutinising very closely the bill of fare provided for his rich patients and striking out or inserting different dishes, some of which he had invented himself. Dr Villermet investigated the mortality statistics of a large number of historical gourmands, and, in an article presented to the French Academy of Medicine, supported the contention that on an average the length of life of a gourmet was greater than that of the indiscriminate eater—a conclusion with which a modern investigator agrees. Careme protested against the attitude of the profession towards dietetics in his day. " The doctor," he wrote, " speaks ill of the cook in order that he may not lose his influence over the mind of the rich man, but the talent of a good cook tends more to the preservation of his master's health than the factitious science of certain doctors, whose medical advice is regulated by their own interests." Nevertheless, Careme gives due credit to the value of the medical gastronomes of his day in

influencing the development of his art. *Potage Broussais*, *potage Roques*, and *matelote à la Segalas* testify to the respect he entertained towards them.

During the Middle Ages, Venice was renowned for its gastrosophs. One of the Doges married a Turkish woman, who was responsible for the introduction of forks into the republic, and whose table was a byword for discriminate good taste in the selection and variety of the viands placed before the guests. One of the anti-popes was so much of a gourmand that he was publicly reprovved for his fondness for Venetian luxuries. In general the papal table during the Middle Ages was frugal in the extreme. The menu of a dinner served up to a Pope before blessing a party of Crusaders has been handed down to us and is a fine example of simplicity. The first course consisted of fresh beans boiled in milk, and this was followed by a sweet *pilau* of rice boiled in milk with almonds and cinnamon. The third course was baked eels; a simple dessert of figs and grapes ended the meal. Frederick Barbarossa was a great gourmand, but was simple in his tastes and confined his gastronomic energies to the consumption of huge plates of sliced ham. Andreas Tiraquellas proposed that a law should be passed making it penal for a commoner to be a gourmand. He suggested that a schedule of "noble dishes" should be drawn up which should exclude the more common folk dishes; only a member of the patrician order would be allowed to have a "noble dish" on his table.

According to Diogenes Laertius, Pythagoras was of a similar opinion ; and a law was actually passed by the Emperor Gratian prohibiting the use of certain condiments in plebeian kitchens. Similar examples of dietetic despotism are to be found in the practices of certain savage tribes which "taboo" the use of specific articles of food by those who are not of a special caste. On the whole, however, Italy has not yielded many historic gourmands in modern times. The best-known representative of the genus south of the Alps, and the one most worthy to be reckoned as a gastrosoph, was the Marquis Caraccioli, who was for a time Neapolitan minister in England. His table was reputed the best in London, but he declared that Englishmen did not know how to eat. When he returned to Naples he was asked how he had liked England, and made the historic reply : "How can I like a country where men have half a hundred religions and only one sauce !"

The famous French cooks who may claim to have been artists in the true sense of the term nearly all flourished under the period immediately antecedent to the Revolution. Following the Revolution, during the Consulate, came a number of even more expert culinary masters who not only added to the number of new dishes, but laid down the principles which guide modern French cookery and amplified the art in many ways—Robert, who gave his name to the well-known sauce : Rechaud ; Benaud, the famous chef of the gastrosophist Cambacérès, whose

dinners proved that dining is the best school for diplomatists ; Farci of the Bouche Imperiale ; Esbras ; Chevalier ; Wery ; and Bouchereche, who so faithfully and efficiently served Talleyrand that the secretary's table won an unsurpassed renown not only in France, but throughout the "eating world" ; Legacque, cook to Marshal Ducros ; Beauvilliers, the talented chef of Louis XVIII., whose treatise on the art remained for long a standard authority ; Baleine, the proprietor of the famous Rocher de la Cancale Restaurant ; and the "exquisite Careme," descendant of a long line of noted chefs and himself the most famous exponent of the art. Under their able management the reign of the gourmands and epicures of the period of the Empire set in. Napoleon himself, although a "coarse eater," as Careme describes him, knew how to appreciate the qualities of a good dinner, and was well aware of the conciliatory influence which dining exercised on the political mind. His Chancellor, Cambacérès, kept a table which was renowned not only for its luxury, but for its supreme taste and the choiceness of its combinations. When Napoleon was in a good humour he would send his visitors away with the remark : "Go and dine with Cambacérès !" The Chancellor was a noted gourmand who ate large quantities of food but preserved his taste to the last. During a prolonged interview with the Emperor he became visibly agitated towards the dinner-hour, and hastily scribbled some words on a slip of paper which he passed to an *aide* with a whispered remark.

Napoleon's curiosity was aroused, and he demanded to know what the note contained, whereupon Cambacérès hastily said that it was merely an intimation to the cook, "Gardez les entremets; les rôtis sont perdus!" This pathetic solicitude melted the Emperor's heart, and he broke up the sitting and accompanied the Chancellor to dine off the half-ruined *rôtis*.

Jean François de Peyrusse, Duc d'Escars and *grand maître* to Louis XVIII., was an ardent lover of the table and composed a variety of dishes in the cooking of which his royal master aided him, but died, unhappily, without obtaining the gratification derived from the knowledge that his name was to be inseparably associated with a special *plat*. Louis was a great eater, but scarcely a gastrosoph in the true sense of the term. With de Peyrusse's help he invented the "truffes à la purée d'ortolans," and the two ate the dish, which was far more than they could conveniently manage, late at night. The following morning the *grand maître* was indisposed and the King hurried off to see him, and, while expressing the greatest sympathy with his condition, ended up by remarking: "After all, this only proves what I have always said to you—that I have the better stomach of the two!"

The Marquis de Cussy was another Napoleonic gourmand, whose favourite contention was that there would never have been a Reformation if the Church had not prescribed fasting. "The spiritual power," he declared, "should on no account meddle

in the affairs of the kitchen, and if Luther had been allowed to eat game on a Friday, he would never have been a schismatic." When Napoleon complained to Cussy that he could not stand chicken since it was such insipid meat, the Marquis asserted that he would serve up chicken in a different form at every meal during a whole year, an assertion which is not surprising when one bears in mind that a cookery book of the period gives nearly six hundred ways of serving eggs. Cussy was himself a gastrosoph. He drank and ate slowly and moderately, rarely prolonging his dinner beyond two hours, and insisting on the importance of a short code of rules which he drew up: "Never have more than at most ten guests at table, and if you can limit the number to five so much the better"; "Never eat when you have no appetite"; "Ne faites rien de trop pour votre estomac ou il vous abandonnera car il est ingrat"; and finally, "Ne réunissez à dîner que les gens qui s'affilient en morale et en pensées." The wisdom of the modern wise cannot improve on these precepts!

Montmireil was cook to the Duc de San Carlos, Spanish Ambassador to the Vatican, and later on served the celebrated Chateaubriand in the same capacity. He has been immortalised in the latter's *Memoirs*, and was responsible for the excellent table which the literary French Ambassador kept at Rome. Anton Careme was Talleyrand's cook, and his reputation stood so high that he was accounted the first chef in the world at an age when there were many

celebrated cooks whose reputations equalled those of the great bankers or soldiers. The Emperor Alexander, dining at Talleyrand's, asked that the cook might be presented to him. He was so much struck with Careme's address and skill that he engaged him, with Talleyrand's permission, to come to St Petersburg and be head chef to the Imperial Court. His salary was to be at the rate of 2000 guineas per year, and he was to have a special allowance of £5000 a month with which to provide whatever extras his art required in Russia. Notwithstanding these favourable terms, Careme did not stay long at the Russian Court. He despised Russian cookery and Russian ways of eating, and the only good thing he noticed in "that country of perversities" was the Russian way of serving a set meal—a fashion which is now universal in Europe and which Careme popularised in France. He never troubled to acquire the language, remarking that it was waste of time to study the tongue of a nation that had no cookery; and as the manner in which the Court functionaries treated him did not please him, he threw up his post. Lord Stewart, just appointed ambassador to the Austrian Court, engaged him as soon as he reached Paris, and Careme left for Vienna. His new master was an ideal gastrosoph, with whom he remained until he became chef to the first Rothschild.

Canova, the famous sculptor, was a cook's apprentice whose first trials in the art of plastic reproduction were made in the kitchen. He modelled lions in

butter long before he carved cherubs in stone, and that is probably the reason why the kings of beasts represented on the magnificent tomb of Clement VIII. are said by Thorwaldsen to have a somewhat smooth and buttery appearance, not quite in keeping with their known ferocity. Rinaldi, Canova's pupil, was another cook, and designed numerous set pieces when he had already acquired some reputation as a sculptor. In modern days the merit of some of the "set pieces" fashioned by painstaking artists in Moscow and Berlin especially surpass in artistic merit and originality of conception the average piece of sculpture exhibited at the Royal Academy.

Talleyrand was unquestionably one of the sanest and most philosophical gastrosophs who may lay claim to the title, and his dinners were renowned for their quality as well as for the exquisite selection of dishes and the care taken to ensure the bodily and mental comfort of the guests. Talleyrand himself was a frugal eater, whose consumption of food was exceedingly limited in the early part of the day. He started his work upon a cup of camomile tea, of which he was very fond and which he regarded as an excellent restorative, and dined in the early afternoon, usually eating nothing except a scrap of toast with his tea. He was very careful about the dinner menu, holding that "une cuisine saine et méditée" strengthened and improved health and kept at bay the disorders of old age. His dinner consisted invariably of ten courses, two soups, two fish dishes, two to four different

entrées, two roasts, and two sweet *entremets*. He took only one dish of each course and ate sparingly, slowly, but with great enjoyment of each, and rarely touched dessert, while he confined himself to diluted claret, with one glass of sherry with the soup and a glass of old Malaga with the sweets. At the end of the dinner the cook came in and brought his master a large cup of strong coffee, which was taken with a lump of sugar. Talleyrand was an ideal host, and was never seen to better advantage than at his own table, where his delightful conversation, his tact, and his encyclopædic knowledge impressed everyone who was privileged to listen to him.

Brillat-Savarin, the author of the famous *Physiologie du Goût*, was born at Belley in 1755 and was an advocate by profession. He went as an exile to America, where he learned to appreciate the qualities of roast turkey, and returned to France in 1796. Although his book, published after his death and translated into most civilised languages, gave him a posthumous reputation as an ideal gastrosoph, contemporary accounts present him more in the light of a great eater than a gourmet. He knew everything about the theory of cookery, and his chatty discourse on the art of dining contains a great deal of useful and instructive information, while his aphorisms have been plagiarised by every writer on the subject who was acquainted with his work. At table he ate with great gusto, and approached the dishes in silence, probably with the same spirit of reverence that made

Thackeray say: "Hush, don't let us speak a word before we have finished this fish!" As a wit he never gained a reputation, but he was known as an authority on the regulation of a menu and the accessories of the table, while his acquaintance with the history of cookery was profound. His *Physiologie* consists of a series of meditations, each forming a special chapter, and each dealing with a different aspect of the subject of gastronomy. Some of his well-considered opinions have been quoted in the preceding chapters; but the reader who wishes to enjoy to the full the amusement and instruction to be derived from the *Physiologie* is recommended to read the book itself, or the early English translation by Simpson.

Berchoux was the poet not of the breakfast- but of the dinner-table, and composed *La Gastronomie*, on which his reputation as a gourmet rests, while he was studying cookery, in which he took a great interest. The poem is doggerel for the most part, but gives a good sketch of the history of the table and is written in an agreeable and racy style. Favot, who has included it in his classics of the table, calls it "le dernier soupir de l'école de Voltaire," and, in view of the author's good-natured cynicism, the criticism is not exaggerated. Colnet, the other poet of the table, wrote *L'Art de diner en Ville*, which is much better poetry but hardly so interesting from a gastronomic point of view; while Grimod de la Reyniere, who has been styled the Corneille of French gastrosophs, is best known for his valuable and

informative *Almanach des Gourmands*, which bristles with good things and cannot be disregarded by anyone who desires to study the subject of dietetics.

Since the first edition of this book was published, many new treatises on cooks and cookery have appeared, and several of the older cookery books have been reprinted. It would take too long to enumerate them here, but a few are of outstanding merit and should find a niche on the shelves of every student of the art. Mrs Cook's commentary on Mrs Glasse's cook-book has lately been republished by the Oxford University Press, and is entertaining reading, although the majority of the recipes given in it are hardly likely to be favoured by most modern cooks. Countess Morphy's *Recipes of all Nations* is a most excellent manual that gives full particulars for the preparation of many out-of-the-way dishes and interesting comments on the wines of various localities. Kettner's *Book of the Table* was reprinted in 1912, and, alphabetically arranged as it is, can be looked upon as still one of the best and most authoritative works on the subject. Therese and Bonney's *French Cooking for English Kitchens*, and Juanita Cooper's *The Cook's Book* are racily written and contain much valuable information and many useful hints. The *Memoirs* of M Henri Charpentier, who invented *crêpes Suzette*, may be mentioned as an admirable autobiography of a professional expert who is generous enough to take us fully into his confidence and confide to us some of his cherished

gastronomic secrets. Mr Morton Shand's well-known *Book of Food* and *Book of Wine* are to be reckoned among the classics; they both possess the choice wit and sparkling vitality that the gastrosoph so fervently appreciates. Mr C. W. Berry's *In Search of Wine* stands in a class of its own; it is both a guide book, a wine-lover's book, and a repository of excellent menus, and so replete with information that it is a never-failing source of interest. Besides these, many others have been published on the Continent and in America. Some are by women writers, who have by this time gloriously demonstrated the falsity of Dr Johnson's vindictive remark that "no woman can ever write a good cook-book."

CHAPTER XI

DIET AND DISEASE

“ I do not wonder at what men suffer, but I often wonder at what they lose.”—RUSKIN.

“ No one can eat with pleasure and profit if his body is not healthy ; no one can have a good appetite if his digestive functions are not in order ; no one can appreciate a dinner if he is troubled with ill-health.” Boerhaave, the great physician of his day and himself a gastrosoph and a dietician of no mean order, was perfectly aware when he wrote these words that in certain circumstances sickness creates an abnormal appetite, but his dictum applies to the average and not to the exceptional eater. The three words that he adopted as his dietetic motto are so much to the point that they deserve to be the text of every book on dietetics : “ Manger, mâcher, et marcher ! ”

Unfortunately, however, there are many persons who, like Pope, are “ cursed with a querulous and revolutionary diathesis,” and it is necessary to deal with the subject in some detail. As a preface to all further remarks it may at once be said that when the diner is unwell, and finds that his food is badly

assimilated or disagrees with him, he should consult his doctor. Home treatment for anything that concerns so delicate yet so long-suffering an apparatus as the digestive tract is strongly to be deprecated, and nothing that follows in this chapter must be taken as a justification for resorting to such treatment. But it is very obvious that the average layman will be in a position to help his medical attendant if he knows what foods disagree and in what manner they interfere with his digestion. It is true the complaint so frequently made that the doctor does not give adequate attention to dietetics is in some measure true. Medical students are taught the essentials of physiology, how food is digested, how food values are estimated, and how diets are arranged, but they are never taught the equally important principles of good cookery and the relative value of certain dishes. In their professional education the question of taste is wholly neglected, and they are left to acquire instruction with regard to this subject by personal experience, which is often bought in an expensive market. A little more attention to the art of dining and of preparing food is perhaps of more practical value in later life than the knowledge of the caloric coefficients of the dietaries of the Styrian peasant and the Harvard boating crew.

A great many unfortunate results happen from errors in diet, errors often committed not through want of knowledge and experience, but through want of care in the application of the knowledge derived

from such experience. Where these results follow immediately after the intake of food or drink—as in the case of the too generous consumption of wine or of the eating of poisoned food—the diner who has been indiscreet knows at once that he has transgressed. But more often their effects are insidious. Nature is forbearing and long suffering; she does her best to make up for temporary indiscretions and to counteract the results of occasional strain. But her powers of endurance are not infinite, and when these powers are habitually abused, as by the individual who overeats and exercises no moderation in drinking, ill health must be the inevitable consequence, unless it happens that the individual is one of those fortunate persons who seem to be able to prove the general law by being themselves exceptions to it. The assumption that a nine months' overfeeding can be made good by a three months' fasting, the effects of periodical debauches in eating and drinking wiped away by an occasional visit to a fashionable spa or bathing resort, or by means of a diet cure persisted in for a few weeks, is the cause of misery and ill health to many of us who are forgetful of the fact that the only true guiding lines for those who wish to enjoy the pleasures of the table, and at the same time to preserve good health, are moderation coupled with the exercise of wise and judicious discrimination in what is eaten and in the manner of the eating.

One of the most frequent and most obvious results of overfeeding is in the accumulation of a superfluity

of adipose tissue, constituting the condition known as obesity or stoutness. This is a sign that the intake is more than the body requires; the surplusage is stored away as fat. A moderate degree of adiposity is healthy and beneficial; an excess, the reverse, since it oppresses the individual and throws an extra strain on his tissues and organs. This is a fact which has been observed and commented upon from the earliest times, and the effects of such an increase of *avoirdupois* are too well known to need further description.

Among the Lacedæmonians obesity in a young man was deemed a sign of disgrace, and Agatharchides remarks that it is the height of infamy for a young adult to have a double chin! Magas, King of Cyrene, who was a phenomenally heavy eater, is said to have died of obesity, and his memory and his example were held up as a warning to gourmands. The laws on the point appear never to have been enforced, but there is one case which leads us to suppose that they were not after all a dead letter. Thus, it is stated that Naucrides, "an inordinately fat young man," was publicly reproached by Lysander for being an effeminate voluptuary, flogged by his companions, and ordered to be exiled, but finally pardoned on condition that he reformed his life and gave tangible evidence of such reformation by a decrease in weight. On the other hand, a spare frame and wiriness were esteemed as signs of strength and grace. Schoolboys will remember the case of Philetas, the Coan poet, who was said to be so thin that he had to wear plates

of lead on his feet to prevent the wind from blowing him over. Archestratus the soothsayer weighed only one obol, and Panaretus was even thinner. Polemo, who wrote a treatise on *Wonderful Men and Extraordinary Things*, states that the latter was never once ill in his life, and was accustomed to work hard and to eat well. The exceeding thinness of Phillipides became a byword, and both Aristophon and Menander employed his name in an adjectival sense to denote superlative attenuity.

The curiosities of medicine furnish various other illustrations of the fact that extreme fatness or the reverse is not after all so rare, and anyone who has studied the literature can easily add to these examples and parallel them with other instances of phenomenal obesity or striking thinness.

To a certain extent both conditions are compatible with good health. Some people, as Erisistratus pointed out, are born to be fat and others to be spare. Modern scientists will very likely explain these cases on the assumption that some individuals are more prone to lay up a reserve stock of material than others; the metabolism is less than normal, and they are more likely to get fat on a diet which would not produce the same reserve in another. In the same way the naturally thin individual has a greater waste of energy and consumes his reserve stock more rapidly. What determines these two diatheses we do not know, any more than we know what are the determining factors in developing certain personal idiosyncrasies.

The cure and improvement of obesity lie in decreasing the total intake of the food and in making it more equal to the actual needs of the body. That is the theory of all diet cures for obesity, but in practice the application of this rule is often beset with many difficulties. No sane person needs to be warned against trying to reduce his weight by taking any drugs or so-called fat reducers. They act, when they do act, by interfering with the digestion of food, and so limiting the amount of nutriment which is available for assimilation. One or two powerful drugs are known which do not act in that manner; but their use needs care, and is not devoid of danger when they are employed to reduce the weight of an individual who is unnecessarily obese. The danger of drinking large quantities of vinegar has been well pointed out by Brillat-Savarin, who cites cases in which the practice proved fatal. The stout diner who wishes to become thinner must have recourse to none of these aids. He must carefully consider his dietary and manner of life, and eliminate from both such factors as conduce to the laying up of adipose tissue. And it may be mentioned at once that the habit of life is usually more important than the diet itself. The obese individual takes on an average little exercise and sleeps much. He complains that when he does take exercise he has to eat more, and that the advice to work harder and eat less is something which it is impossible to follow. Therefore he prefers to try a diet cure. With proper care, however, exercise,

provided it can be indulged in, is the first essential towards curing the condition from which he suffers. By consuming more energy it is true that he creates a demand for more food, but it is relatively easy to supply that demand without providing a surplusage, and so in time to draw upon the actual reserve which has been stored up in the shape of fat. The diet for this purpose has to be regulated very carefully and the treatment must be persisted in for a long time. It is absurd to imagine that a cure can be brought about in a few weeks or months when the individual has taken years to accumulate the fat. By strenuous exercise and by undergoing a "bath cure" it is true the weight may be reduced within a comparatively short period by two stone or more, but it is hardly likely that such treatment will benefit the individual in the long run.

There is no necessity that the obese individual should be put on a Banting system of diet or have his intake cut down to the absolute minimum. Nor is it necessary that he should cut down his carbohydrates and fats to the vanishing point, omit his beer, and lock up his wine-cellar. His physician will be able to draw up a diet scale for him in which all these things are included, on condition that indulgence in them is moderate and is followed, or preceded, by proper exercise and work. The amount of fat that he eats must be diminished; his food must be made plainer, and care must be taken to exclude as much as possible the large group of food sparers,

which, while not foods in themselves, economise the consumption of potential energy. At the same time, it is inadvisable to cut down the quantity of his intake summarily. That may be done where the individual is strong-minded enough to follow out the prescribed rules with regard to limitations, but in other cases it leads to a craving for more food which he will feel bound to indulge. Heavy wines, sweet liquors, fruits and nuts preserved with sugar, may advantageously be excluded from the dietary, so too may the various forms of concentrated proteid in the shape of cheese and meats preserved in oils. An abundance of green vegetables, of brown bread, and of lean meat may be allowed, always on the supposition that the individual takes more exercise. Above all, care must be taken that the general health does not suffer during the treatment. Obese subjects are very prone to derangements of the digestive system, and are naturally flabby and unable to ward off attacks of infection. They need also a proportionately larger amount of food, and it is therefore unwise to cut down their provisions without exercising care in doing so.

In the case of the thin individual who wishes to increase his weight, the practical application of the theoretical rules are much simpler. Such an individual needs more fat, more carbohydrate, more proteid, and also more water. His diet should be generous and liberal, but it must always be borne in mind that it is not the quantity of food that is

eaten but what is assimilated that goes to build up the tissues. The first thing to find out in such a case is therefore whether or not his condition is due to want of food—*i.e.*, underfeeding or improper feeding, or, as is more often the case, to want of proper assimilation owing to some gastric or intestinal condition or some constitutional disease. The importance of a proper medical examination need therefore merely be referred to. It is a necessary preliminary in all cases where dietetic treatment for some special condition is required, and it is nowhere more important than in the case of excessively thin individuals who eat their food with great relish and appetite, but nevertheless seem to derive little benefit from it. Such an individual may be suffering from unsuspected disease of a grave character, and it is folly to treat him as if he were a normal person before the possibility of such an underlying pathological error has been eliminated by proper examination.

Where a definite condition has been diagnosed, the proper person to prescribe the diet is the physician, who alone can judge of his patient's individual idiosyncrasies. No purpose will therefore be served by giving particulars of the various dietaries in such cases as diabetes, anæmia, consumption, or gout. All that need be said is that modern medicine has greatly modified the views held some years ago with regard to the diet which may be permitted in all these cases. Formerly, a variety of foods which we now know have little or no causal relation to these diseases

were strictly tabooed. The diabetic was not allowed to eat potatoes. We are now aware that the prohibition of starchy foods completely in such a case often does more harm than good. Similarly, in gout the patient was not allowed to take port or to eat certain favourite dishes. He was urged to give cider and boiled greens a trial, and to forbid sweetbreads and pastry on his table. The tendency now is to allow him to indulge moderately in what he fancies, although certain authorities still, on the theory that the disease is caused by the ingestion of certain articles of food which are broken up into certain substances, incline to prohibit a long list of dishes. The wise physician, who knows his patient's nature and tastes, will deal with every case on its individual merits and make a close study of it. At the same time, the patient, by keeping a record of what he eats and what affects him in a deleterious way, can often help his doctor in various ways.

One common condition, which, while it may be the symptom of a disease, is often deemed of so little importance that slight attention is paid to it by the individual, may here be referred to. This is constipation. The diet in this condition must be of a nature to favour a proper action of the bowels. It is often recommended that the individual who is subject to constipation should eat foods which leave a large residue in the shape of indigestible material. Food-stuffs rich in cellulose, such as raw and boiled green vegetables, wholemeal bread, and fruits stewed or

boiled in their rinds are recommended. Sometimes, especially in cases where the individual has absolutely neglected such food, the change is found to act very well. More often it causes disturbance of digestion and intestinal trouble. The proper way to deal with the matter, if it is to be dealt with by diet alone, is to avoid foods which are known to be constipating. No list of such foods can be drawn up, since the personal factor is one which it is impossible to disregard in such a question. Milk in some cases is found to be excessively constipating. In other patients it gives rise to diarrhœa. In general, well-cooked foods are not constipating, and where constipation is complained of it is nearly always a sign that the individual consumes badly prepared meals, and also usually that his intake of foods and fats is deficient. Fruit and green salads, owing to the acids they contain, are direct stimulants to the intestine, and have therefore some value in this condition, but here again their preparation is important.

Sleeplessness is very commonly caused by dietetic errors, and before any drug treatment is prescribed for insomnia the daily diet of the patient should be most carefully scrutinised. Narcotic drugs are in nearly all cases influenced, so far as their action in causing sleep is concerned, by the assimilability of the food eaten a few hours before they are given. In many cases they are quite unnecessary, and equally good, more lasting and more pleasant effects can be obtained by prescribing suitable food-stuffs. For the

sleeplessness that comes from fatigue, nothing is more helpful than a quick and easily digested food ; alcohol, in moderate quantities, is probably the best ; it can be combined with cream or yolk of egg, and may usefully be given as a *sorbet* or a cream ice in summer and as a grog in winter. Insomnia due to worry, or to disturbance of the sleep-rhythm, is best treated dietetically by taking some form of food half an hour before going to bed, or even while lying in bed, that is specially liked, but that is easily digested. Some kinds of fruit have a high reputation for curing and preventing sleeplessness ; pears, rose-apples and pineapple are said to be almost specific in some cases. The virtues of salad as a soporific have been extolled from time immemorial ; unfortunately science has found nothing whatever in lettuce that makes it particularly effective in inducing sleep. The efficacy of a good salad in curing insomnia depends most probably on the oil and vinegar, although the onion and other ingredients in it may play some part. It is unlikely that the hard cellulose material of green vegetables, that needs thorough mastication and cannot possibly be dealt with in the stomach, has any beneficial action on the nervous system. On the other hand, bland, easily digested dishes are a real help to those who find difficulty in getting to sleep or who wake up early and lie restlessly waiting for dawn. The thin gruels, good, well-flavoured *consommés* (*not*, however, potted and preserved soups) and creamed *purées* are all excellent, but should always be eaten

with a dry biscuit or cracker, and should be consumed very slowly. The virtues of cheese are less well known, but in some cases cheese is well worth a trial. The essential is that the cheese should be well ripened, superfatted as it were, and that it should be thoroughly masticated. Where false teeth are worn it is better to take a hot posset or a gruel, with or without the addition of a small quantity of alcohol. Heartburn, which has nothing whatever to do with the heart nor with burning, is, like hiccough, something about which science has not yet made up its mind. It arises, probably, in the lower end of the gullet, and is always caused by some dietetic error, but in cases of disease it is more easily provoked by slight errors that ordinarily would not interfere with comfort. Where heartburn persists, a doctor should be consulted, and a "test meal" taken and the stomach contents analysed. Where it is transient, a dusting of nutmeg on the last article of food taken at a meal usually prevents it.

Another condition which may be briefly referred to is bronchitis. Many people suffer periodically from catarrhal conditions of the upper air passages which yield to no treatment, but apparently come and go without any regular cause. The immediate treatment of such conditions is a matter to be left to the physician or surgeon, but the individual who is subject to what is generally known as chronic bronchitis may do much to keep his enemy at bay by proper attention to his diet. Salted and otherwise

preserved meats and fish, and a superabundance of animal protein, must be avoided, and vegetables or fruits may with advantage be substituted for them. Care must always be taken that the meals are well cooked and easily digestible. Similarly, in cases of chronic dyspepsia and indigestion the dietetic treatment is not so much in prohibiting numerous articles of diet as in utilising the food in the best manner. The cook here can do more good perhaps by careful attention to the peculiarities of the individual than the physician. It was no idle boast of Carême that he had cured his employer of indigestion after five physicians had failed to do so.

Ptomaine poisoning is a bugbear which is often accused for having created a condition of ill health which results after the consumption of a meal. In the majority of cases it has nothing whatever to do with such bad after-effects, which are due solely to the fact that the digestive apparatus cannot cope with the intake. The majority of transient cases of bad indigestion ascribed to ptomaine poisoning are really due to overeating or to improper eating. Ptomaines are found in decomposing animal and vegetable tissues. They are exceedingly powerful poisons, and the best example of the series is the so-called cadaverin, which is found in decomposing animal fluids. Under certain conditions they are broken up by heat and decomposed. When taken into the body they give rise to rapid and very severe symptoms of poisoning, the effects of which are sometimes fatal. They are

not bacteria, but the results, probably, of the action of bacteria on decomposing animal matter; and are analogous to certain alkaloids, although their exact composition is still a matter of doubt. Where unwholesome or tainted meat is eaten and gives rise to symptoms of indigestion, the case is more often one of temporary inability on the part of the digestive organs to assimilate the food than true ptomaine poisoning. The latter is a very grave, and fortunately a rare, condition. If care is taken in the selection of food, especially tinned and preserved meats, the possibility of poisoning by these alkaloids is infinitesimal and may be disregarded. Tainted food is easily suspected in the majority of cases, and, although it may be disguised on the table, the palate can usually discriminate between a dish that is made of the uncontaminated article and one which has been composed of inferior ingredients.

There are many disease conditions that undoubtedly arise from deficiency of some essential ingredient in the diet. Such conditions are generally known as "deficiency diseases." Formerly we knew but a few of them, of which the chief were scurvy, rickets, infantile scurvy, and beri-beri. Now we have a long list of them, that may in course of time be modified or increased, as our knowledge of what causes such conditions increases. In general, it may be said that such diseases are due to want of one or other of the "accessory food factors"—the vitamins—in the diet (see Chapter I, pp. 6 *et seq.*). These deficiency

diseases are all characterised by nutritional disturbances, chronic or acute according to the duration and intensity of the deficiency. In most instances they can be cured by alterations in diet of the kind necessary to supply the missing substances. In the most acute cases, however, *therapeutic* administration of the vitamin, as a rich concentrate or in the pure chemical form, when this is available, may be essential. When the disease involves, as it often does, digestive disturbances interfering with the absorption of food constituents, it may even be necessary to inject a solution of the vitamin direct into the patient's bloodstream. But most cases of vitamin deficiency disease are preventable by dietary means alone.

There are some other conditions in which it cannot be demonstrated that they are caused by lack of appropriate vitamins, but that are probably also caused by some diet deficiency. It has been postulated that in such cases there is a want of some necessary body-ferment. We know now that ferments are all-important in the animal economy. They are imperatively necessary to split up our ordinary food-stuffs so as to make them assimilable. Unfortunately, we still know little about their composition and the manner in which they are manufactured by the body, and until our knowledge on these points is substantially increased we can only speculate on the part that they play in transforming certain poisons into nutritious foods and certain food-stuffs into poisons.

That they do play an important part we know from clinical experience and laboratory experiment. There are certain food poisons, some of them, like ergot, well known; others, like the contaminants of wheat grown in fields that contain weeds like darnel and *senecio*, less well known. They cause characteristic symptoms when they are eaten with food-stuffs, but not always, and it is highly probable that the human body has some means, most likely a ferment, that neutralises many of their poisonous qualities, and enables some people to partake of such contaminated food with impunity.

The diseases that arise from animal parasites in our food may be referred to in conclusion. They are mostly caused by eating raw or partially cooked food, either meat or vegetables or fruit, on which are found the eggs of various species of worms. Here again it is probable that the healthy human being deals adequately and almost immediately with such contaminants, but where there is any defect in the organism it cannot do so, and the worms find a suitable nest somewhere in the intestines or, as in the case of trichinæ, in the muscles of the feeder. Hookworm is the most prevalent of these human parasites; it infests millions of the human race. Tapeworm and the other varieties of intestinal worms are to-day just as common as they were a century ago—which is a disheartening reflection on our methods of eating and preparing food.

For to guard against illness and disease it is neces-

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sary to take some care in preparing and choosing food. For the preparation the cook is responsible, and a good cook will see to it that when he serves food at table such food is pure and wholesome, free from all adulteration and contamination, and not spoiled by unsatisfactory cooking, and not impaired by injudicious preparation.

BIBLIOGRAPHY

THERE are so many books and articles on dietetics that it is manifestly impossible to give a list of them in a book like this. The bibliography of the art of dining alone extends to several thousand, and there are probably several thousand cookery books in various European languages. In the preceding chapters I have made use of the information contained in the books listed below, but in addition I have consulted many instructive articles that have been published in journals in England, on the Continent and in America. It is impossible to enumerate all these, although the newest views on food are contained in such articles and any popular epitome of such views must of necessity be scientifically out of date within a decade. The most recent information about vitamins and catechins are contained in articles in the medical press of which no summary has been printed in book form. The following list is therefore merely that of books, to which reference has been made in the preceding pages.

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