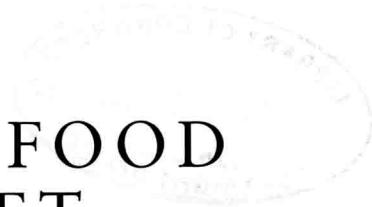


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GALEN ON FOOD AND DIET



Mark Grant

This new edition of Galen's *On Food and Diet* is based on the Latin text edited by the author of the first edition, with additions and corrections made by the present editor. It includes the original Latin text, with an English translation, and a detailed introduction and notes. The book also contains a comprehensive index and a bibliography.

The book is intended for students of medicine and health care, as well as for anyone interested in ancient Greek and Roman medical thought. It provides a valuable insight into the way in which Galen approached the study of food and diet, and how he used his knowledge to treat various diseases. The book also includes a detailed analysis of Galen's dietary advice, and how it compares with modern nutritional guidelines.

The book is published in association with the Wellcome Trust, and is available from Routledge, Taylor & Francis Group. It is also available online at www.routledge.com.



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INTRODUCTION

The life of Galen

Medicine occupies a central position in our lives today. We expect to be diagnosed correctly and to receive the latest treatment based on extensive scientific research. The media enthusiastically recount breakthroughs in our understanding of disease, or complex operations that can restore our quality of life. Alongside this progress psychologists have noted our increasing bewilderment and even anger in the face of death. Wonder at what medicine can achieve is disturbed by what it cannot. It is difficult then to envisage a world where medicine could offer only some comfort and where death, especially among the very young, was always lurking as a very real threat. Yet many historians concede that palliative care by Galen would have been far preferable to anything that was to be available until the closing years of the nineteenth century.

Galen was born in AD 129 at Pergamum, a large city on the Aegean seaboard of what is now Turkey.¹ As his father was an architect and interested in education, Galen was given lessons in mathematics and geometry. For a child from a wealthy background this was in some ways unusual, the emphasis in Roman schools being on the literature and rhetoric necessary for a career as a lawyer or a town councillor. On the other hand architecture, whilst an essential part of Roman civilisation, was not a profession that commanded a particularly high status. This liberal and in some ways radical background allowed Galen the scope to experiment: he was not bound by his family to enter into what was regarded as a traditionally safe career. Moreover, since Pergamum had long been an intellectual and cultural centre, Galen was able to attend the lectures of the Stoic and Platonist philosophers who were attracted to the city by its great library. It is an indication of his mental abilities that Galen was only fourteen when he began these studies.

In addition to its academic excellence, Pergamum was a religious centre with a large sanctuary dedicated to Asclepius. As the son of Apollo, Asclepius acted like a bridge between the divine and the human, for although he was a powerful deity, he was nevertheless concerned enough with mortals to try to combat death through his patronage of medicine. Healing by psychological means was conducted at temples around the Roman world, the sick sleeping in the precincts in the hope of dreaming about their own particular cures.² Even outside the temples, dreams were held to predict the future and advise on future courses of action. When Galen was seventeen his father received such a sign: he was to study medicine.

Hippocrates wrote in the fifth century BC that a good doctor should travel.³ On the death of his father in AD 148 (or perhaps AD 149), Galen spent a number of years training with medical experts in Smyrna, Corinth and Alexandria.⁴ There was no uniform medical curriculum or even a shared belief in how the body worked. Instead there were groups of adherents to several different theories, sometimes referred to as schools, based around opposing philosophical premises.⁵ Now fully trained, Galen returned to Pergamum in AD 157 and became the doctor to the gladiatorial school in the city. Again, this was an unusual step for an educated person. Gladiators may have fascinated the Romans by their oath of submission to death, but they were still considered socially to be very low or even outside the accepted laws of normal society.⁶

What Galen presumably gained from this appointment was a detailed knowledge of anatomy. Contrary to modern popular belief, gladiators did not usually fight deliberately to the death, especially in a provincial city like Pergamum. Whilst Rome could afford mass slaughter, the expense of training and maintaining gladiators meant that any other city had to harbour its resources. Gladiators were taught to draw blood for the entertainment of the spectators, but once outside the arena doctors were at hand to stitch and bandage ready for the next show. That is not to say that death was avoided, yet it was not a foregone conclusion.⁷ Working with gladiators also allowed Galen to experiment with regulating the diet for healing and building strength. In many instances diet was the only resource that could be applied, so its prominence in all ancient medical writings is understandable.

In the absence of a police force, except in Rome itself, ancient cities were prone to social unrest. The autumn of AD 161 saw Galen leaving Pergamum to avoid being caught up in such an event, perhaps provoked by the sort of food shortages that he mentions throughout his dietary writings. He travelled around the eastern Mediterranean, researching the properties of

various plants and minerals used medicinally in Lemnos, Cyprus and Palestinian Syria (modern Israel), before reaching Rome in the summer of the following year.⁸

Marcus Aurelius had just become emperor. Rome was at the height of its power and prosperity. Galen began to build up his reputation in the capital, giving public lectures and anatomical demonstrations and writing about anatomy. These endeavours came to a close in the summer of AD 166. A Roman army returning from a campaign in the Middle East brought with it the plague and Galen seems to have thought it wiser to return to Pergamum than to try to practise his medicine on those afflicted. In addition, his growing influence had made him numerous enemies among the medical profession and in the face of this violent jealousy he began to harbour doubts about his own physical safety. His efforts, however, had made him famous enough for Marcus Aurelius to invite in AD 168 him to join his military headquarters at Aquileia in northern Italy. Moving to Rome the next year with the imperial family because of another outbreak of the plague, Galen spent the rest of his life in the capital. He became so successful that he was appointed as personal physician to Marcus Aurelius himself. His voluminous writings he authenticated in his treatise *On My Own Books*.⁹ It is now thought that he died in about AD 210, although earlier estimates put his death at about AD 200.

Galen the doctor

The name of Archagathus has been passed down as the first Greek doctor to have practised at Rome. According to Pliny (*Nat.* 29.6.12–13) he set up his surgery in the capital in 219 BC.¹⁰ Both he and his successors were very much engaged with the upper echelons of society that had developed a keen taste for all things Greek, following the wars of conquest that ended with the complete subjugation of that country by Aemilius Paullus in 168 BC. At the same time the lower classes were deeply suspicious of doctors, preferring home cures passed down through the family, magic and astrology, and the assistance of herbalists. Yet from the diverse evidence of writers such as Cicero, Seneca and Plutarch, a general picture can be constructed of what a Roman aristocrat demanded of a doctor, in particular the sort of friendship that could offer comfort throughout the duration of an illness.¹¹

Educated Romans were for the most part conversant with current medical theories. For example Cicero (*Cic.ND* 2.137–8) describes in

precise detail how the body was believed to process food, the disquisition only ending to avoid any possible offence over the nature of defaecation. Celsus, writing in the time of the emperor Tiberius (AD 14–37), wrote an encyclopaedia whose extant part discusses medicine in a tone that seems to reflect an educated person's view of the discipline.¹² Later in the first century AD Seneca makes frequent remarks in his letters about his illnesses and alludes to the sort of help that might be expected in such cases, whilst Pliny pays great attention in his *Natural History* to the broad scope of medicine as it stood in his day.¹³ Petronius (*Petr.*42.5–6) even satirises medicine, focusing on the notion that an illness could be restrained by a starvation diet (*Hp.Nat.Hom.*9=6.54–6L). Not only that, but medical books were available from shops in the Argiletum, open lectures were presented by practising doctors, and surgeons would demonstrate their prowess with the knife in front of audiences.¹⁴

But how Galen fits into this picture is still open to debate. Modern consensus seems to suggest that the status of doctors in the eastern part of the empire was greater than that of their counterparts in the western part, although paucity of evidence must be held up as a strong caveat in this discussion.¹⁵ Patronage is, however, almost certainly the answer to Galen's rapid rise to fame. His family was connected with the leading citizens of Pergamum, and these in turn had connections with the influential and powerful in Rome; so when he arrived in the capital in AD 161, he could quickly become friends with senators and others in the imperial court. Right from the start he was in a far higher position socially than most other doctors who similarly came from the eastern Mediterranean.¹⁶ His private means are further demonstrated when he left Rome the following year, for he had to employ an auctioneer to sell off his house in Rome (*Prog.*9.2=14.648K) – he was no struggling tiro waiting on the largesse of others.

It has been pointed out that Galen was not the only doctor to have a strong showing in both medicine as well as other intellectual pursuits. Thrassippus of Corinth, for instance, was deemed pre-eminent in medicine and poetry.¹⁷ Where Galen was different was in his combative style of rhetoric, his overwhelming sense of self worth and importance, his literary productivity that was enormous by any standard, and his blind assumption that he alone was graced with the ability to bring Hippocrates' work to completion. That he was able to write so much was, of course, due to his use of other medical works as a core outline.¹⁸ Even if he did add further comments as he thought appropriate, his overall knowledge of medicine was by no means dissimilar from that of his contemporaries. He may have served as physician to the Roman elite, but his writings on food and diet

can be used as a legitimate source of what generally counted for medicine in his time.

The Hippocratic background

Throughout Galen's writings the name of Hippocrates is invoked, either in support of a particular idea or to ridicule the views of an opponent. Sometimes Galen goes as far as to idealise Hippocrates almost as if he were a god (e.g. *Gal.Us.Part.*1.9=1.16K). There were several factors which seem to have contributed to this point of view. To begin with, writers of the second century AD were particularly fascinated with the classical past, whether its literary style or philosophical ideas. The former tendency is derided by Galen throughout his dietetic works, for he believed that current nomenclature and phraseology were far to be preferred over archaising sentences (e.g. *Gal.Alim.fac.*2.44.5=6.633K); the latter Galen believed in very strongly, because for him Hippocrates had discovered all that there was to know about medicine, and all that needed to be done was to interpret and explain his theories in more detail.

Even from the time of Hesiod (*Hes.Op.*109 ff) the ancient world had looked back to a mythological golden age when life was good, simple and healthy. Galen had no single philosophical basis for his science because there were so many competing theories about how the body functioned; his teachers had revered Hippocrates and had taught him to commit certain aphorisms to memory. This procedure accorded well with rhetorical practice and its need for pithy statements by which arguments could be supported. Otherwise known as 'the pointed style', it was preferred by writers such as Seneca and Tacitus. It is easy to view Galen's adherence to this method with some cynicism, because he often could not remember where some Hippocratic quotes derived, and yet he was always certain that he knew exactly what an ambiguous statement in Hippocrates actually meant.¹⁹ None the less the method behind this reasoning served as a sound support for his practice of medicine and for his place in Roman society.

Galen's teachers were certainly not unique in their reverence for Hippocrates. Even in the fourth century BC the legend of Hippocrates as the perfect doctor existed, saving patients from the plague, resisting the financial inducements of the Persian king, above all working strenuously as a Greek among fellow Greeks.²⁰ When the emperor Marcus Aurelius called Galen the finest doctor and a unique philosopher (*Gal.Praen.*11=14.660K), this was as a compliment to the image Galen had constructed of himself, an expert in classical ideas despite the decadence of the contemporary world.²¹

To carve a niche in Roman society meant fighting fierce competition. But claiming that all he was doing was to elucidate Hippocrates' ideas gave Galen the wherewithal to win this fight. If an opponent attacked him, then that opponent was attacking Hippocrates, and who could have prevailed against such a potent and hallowed legend?

Diet within medicine

Scribonius Largus, writing at the time of the emperor Claudius (AD 41–54), summed up the stages of medical care (*Scrib.Larg.intr.6*): first came diet, then drugs, and finally either cautery or surgery. Omitted from this list is venesection because not all the schools of medicine advocated this procedure. Diet was therefore not the only way by which disease could be treated, although it was perhaps the most important. As Scribonius Largus states elsewhere (*Scrib.Larg.intr.2*), most people were terrified of the knife or hot iron, but there were factors other than fear behind this emphasis on diet.²² Plutarch (*Plu.Mor.73D*) held that a good doctor was someone who used sleep and diet rather than violent drugs to effect a cure.

Manual work denoted a low social status in the Roman world, yet surgery obviously depended wholly on the knowledge gained from actual experience. This awkwardness can perhaps be seen in the arguments promulgated by some doctors in support of this learning by trial and error.²³ To achieve greater prestige, a doctor had to avoid dirty hands. As Galen was only too well aware, philosophy was the key to this respectability. On the one hand a training in philosophy may have allowed a doctor to communicate more effectively with patients, whilst on the other hand it created the feeling of trust and friendship that Seneca stressed was so important for medical practice and technique.²⁴ Even so, medicine was considered, by the upper end of Roman society, a craft to be shared with slaves and freedmen, a prejudice that did not begin to dissipate until the later empire.²⁵

It has been estimated that some 80 per cent of the patients Galen recorded in his works belonged to the elite, whereas only 46 per cent were sophists and 21 per cent were of the lower classes.²⁶ He himself said that he wrote for Greeks and for anyone who, whilst not actually Greek, at least made efforts to attain the qualities of the Greeks (*Gal.San.Tuend.1.10=6.51K*). If this statement referred to those educated in Greek literature and philosophy, then his focus was very much on the rich and powerful. Moreover, the intimacy demanded by dietetic medicine of the patient's way of life made for a pronounced concentration on the upper strata of society, for only they could afford the time and the expense such

details naturally required.²⁷ Prescribing a diet backed by humoral science to these patients kept a doctor's hands clean and gave a definite intellectual cachet to the interaction.

That a good diet ensured health was a fundamental concept of ancient medicine, since food could cause disease or restore health through its effect on the balance of the humours. Thus prevention was in every way better than a cure. By contrast drugs, venesection, cautery and surgery were drastic, to be used only when diet could no longer help. But there was another idea behind this reliance on diet: everyone had it in their power to control their way of life and this gave to food a moral dimension that accorded well with contemporary Stoic views on life.²⁸ Moderation and balance were essential in the pursuit of truth and the ultimate good. Diet was therefore raised from mere eating for the sustenance of the body to a higher philosophical plane that bolstered its importance within medicine as a whole.

Some foods could also serve as drugs. For example, edder-wort had to be boiled two or three times before its medicinal quality was removed (*Gal.Alim.fac.2.62.1=6.649-50K*). What mattered was the manner and the circumstances under which a particular substance was applied, since the same substance could act as a food or as a drug.²⁹ From the evidence of Galen's dietetic works, a substance generally could be classified as a food if it did not have a pronounced effect on the body – whether that effect was diuretic, laxative, cathartic or the like – whilst a drug acted forcibly as a purge, vermifuge, emetic or similar. So through careful preparation, cooking and seasoning whatever was normally regarded as a drug could be rendered as a food.

Galen's view of the body

Cooking was a process that was believed, in Hippocratic medicine, to be applicable not only to the ripening of fruit and vegetables, but also to the process of digestion. Opposite, therefore, to the concept of raw and unripe were coction and ripeness. The innate heat of the body cooked foods. Thus Dioscorides (*Dsc.2.110.1*) could describe a stomach burning with an intense heat. By the same token, the more foods had been processed and cooked in the kitchen, the more easily they could be digested in the body.³⁰ Galen does not set out his ideas about the digestion as a coherent theory, but rather his views on the subject have to be drawn together from across the whole gamut of his writings.³¹ In broad outline, he thought that food and drink were partly digested in the stomach. The resulting material then

entered the liver through the first veins (which we now call the portal system) to be converted into blood. From the liver the veins carried the blood, now fortified with nourishment, to all the parts of the body. Air, however, was needed for the maintenance of this bodily warmth. This was drawn in through the lungs and the pores of the skin. As with a fire, smoke was produced during the creation of heat and the digestion of food and drink. So when discussing milk, Galen (*Gal.Simpl.Med.2.13=11.491K*) holds that in some people it is turned into a fatty smoke. Here the arteries acted as the vents for the burning process, at the same time as regulating the temperature of the body.

The circulation of the blood was never discovered by Galen, but there was posited instead the gradual ebb and flow of blood through the body. There is a focus on blood throughout ancient medical writings, primarily because it is so easy to see, whether in wounds or in menstruation. One of the main problems that doctors tried to combat was fever, always present in infectious conditions like the common cold and transmitted diseases such as malaria. Many ancient doctors thought that there was only one cause of fever. Galen, on the other hand, argued that there were three causes: first, overheating through exposure to the sun, particular foods and drinks, or problems with transpiration; second, inflammation (accompanied possibly by putrefaction) of excrementitious matter, that is residues left in the body after digestion; and third, the flux of humours to a particular part of the body that subsequently putrefies. A carefully regulated diet could help avoid the production of anything excrementitious. If such matter did accumulate, then venesection was the best way to draw it off. But whereas the Methodics had argued that in venesection one rule applied to all, Galen was adamant that a doctor had to match a diet or the tapping of blood to the individual patient, because everyone was by temperament different.³²

Dietetics according to Galen

Modern medicine can be divided into several discrete areas. At the forefront is western scientific medicine, explaining disease through the physical and chemical world. But even traditionalists acknowledge the potential effectiveness of alternative medicine, whether it is based on heavily diluted extracts of wild plants or the application of specially scented oils by massage. Then again there are eastern forms of medicine like acupuncture that can provide relief from a range of ailments. This wealth of ideas is mentioned because so often ancient medicine is criticised for its incoherence, yet the different schools of thought can in some ways be compared to

the wide range of contemporary ideas regarding healing. The analogy is not of course complete, because in the ancient world there was no dominant mode of practice until Galen made his appearance. His great contribution was to try to systematise the various avenues earlier doctors had taken. Despite his own apparent misgivings about this systematisation, and his belief that further research should be conducted along the lines that he suggested, he was so successful that his writings eclipsed those of his contemporaries to the extent that few of these survive today.

Galen was uniquely equipped to make a mark on medicine. On a purely practical level, he was of independent means thanks to the legacy of his father. That meant he could write and work at his own leisure without having to look to a demanding patron.³³ As regards theory, he was extremely well educated, especially in philosophy and rhetoric. This enabled him to attack his rivals in a sharp and logical fashion. No doubt the audiences at his public lectures enjoyed his verbal thrusts and quirky humour.³⁴ Yet it was philosophy that Galen regarded as underpinning his ideas. Philosophy had always been held in great honour among both the Greeks and the Romans, while medicine suffered from poor esteem. It is true that the status of doctors had begun to rise under the empire, although the fact that the training of slaves into the profession had to be suppressed, indicates the underlying attitude of society.³⁵ Galen's emphasis on philosophy as a key to becoming a good doctor may be his attempt to link the honoured with the maligned disciplines. It certainly gave him the prestige to mingle with the upper echelons of society, if not as an equal, then certainly as someone to be admired.

While philosophy may have raised the status of medicine, it also hindered the substantiation of ideas. Stoicism, in particular, involved the use of the conditional to prove a hypothesis. So in Galen the admonition recurs frequently as to how a point that is about to be made is obvious from the subsequent inference.³⁶ There is, nevertheless, a certain logic to Galen's discussion of diet and food. To summarise this discussion very briefly, Galen asserted that health could be maintained only when the four humours were evenly balanced within the body. Comprising blood, phlegm, black bile and yellow bile, the humours could break with this symmetry if the body was abused, either through a faulty diet, unaccustomed exercise or a change of climate. Interacting with the humours were the four qualities to whose operation was attributed the birth and decay of all living things. The qualities consisted of hot, cold, wet and dry. Diseases were thought to occur when there was an imbalance of the humours or when there was an immoderate increase of one or more quality. Indigestion could be put down to an excess of phlegm brought on by excessive eating.

2 ON THE HUMOURS

Whatever the basic element of the world may be, among animals it is the humour, just as of course in the measurement of time it is the season. The humours do not possess a single identity or likeness: rather as regards their active and passive qualities, through which they both owe their existence and have constructed their origins in us, they differ from each other in many ways, and not least in their nomenclature. To begin at the beginning: the elements from which the world is made are air, fire, water and earth; the seasons from which the year is composed are spring, summer, winter and autumn; the humours from which animals and humans are composed are yellow bile, blood, phlegm and black bile.

The humours are all combined with moisture and heat, dryness and cold. Thus blood, air and spring are moist and hot (although some people might disagree with this statement regarding air); yellow bile, summer and fire are hot and dry, whilst black bile and earth and autumn are dry and cold; phlegm, water and winter are cold and moist. Humours, elements and seasons are both akin and divergent. For example, air and fire are not the same in dryness and moisture, but are united by their heat; fire and earth are not the same in coldness and heat, but are both very dry; similarly earth and water are cold, but they are set apart by their respective dryness and moisture; water and air are moist, but differ as to heat and coldness.

In the same way the humours and seasons agree and disagree with each other, thereby achieving what is called 'disharmonic' mixing. Yet regardless the elements never change and each remain in the same place, maintaining their permanence in any movement towards each other through nourishment that is provident and suitably proportioned; similarly the seasons occur and are named after the movements of the sun to the south and to the north.

The humours are not like the seasons because they differ amongst themselves in many ways: in place, colour, power, consistency and quality.

Moreover it is vital that the humours do change, just as the elements must change into one another, not always keeping to the same process of change or maintaining a balanced increase, although there is a certain pattern of mutation from what is earthy to what is watery, from what is watery to what is airy, and from what is airy to what is fiery. So there is an irregular change from phlegm to yellow bile, and from blood to black bile. The proof of this argument lies in earthy and melancholic blood, and salty phlegm which in many ways resembles blue bile and easily mutates into it. Phlegmatic bile and blood saturated with mucus present similar properties, as among people with a dropsical or cachetic condition, just as with unmixed yellow bile in people with a hotter and drier constitution. For those who suffer from indigestion, a green bile appears in vomiting and defaecation.

It is therefore in these sort of changes that what is dominant has precedence, whilst the opposite occurs when these changes occur through what is harmonious. A particular humour might on occasion metamorphose into one or another sort of humour according to temperature, time, place, age and diet: for all humours arise and increase at every moment and season. For example, in summer there is a predisposition towards bitter bile, especially among those people who have leanings towards this condition through age, constitution, diet or, above all, through external factors. The prime causes of yellow bile are stress, anger, emotional trauma, labour, physical exercise, insomnia, fasting and hunger. Phlegmatic bile comes about from sleep, drinking water, the consumption of sea food and moist diets in general, and viscous edibles that consist of thick particles. Blood is generated by meat, fowl, eggs and all those foods that are both wholesome and easy to cook, unless something special alters what is eaten. The same is true for black bile, but the surrounding circumstances are more complicated.

When we make proper use of foods in recipes, the attendant humours follow. The blood increases at puberty; hence teenagers are cheerful and enthusiastically disposed to games. But the yellow bile in adolescents makes for anger, sexual drive and bullying early in this stage of life; whilst later there is a surge of black bile, the worst sort of humour, since wherever it rushes it is hard to resist or divert, thus making this stage of life devious, revengeful and stubborn. In old age there is phlegm, when there reigns sluggishness, loss of memory and lethargy.¹ This is because old age is moist and cold, just as the prime of life is dry and cold. Puberty is hot and moist, whilst adolescence belongs to an analogous and superior humour.

The humours owe their origin, maintenance and movement as follows: for blood the liver, veins and both nostrils; for yellow bile the bladder, the area around the liver and the ears; for phlegm the stomach, loin muscles

and the mouth; for black bile the area below the liver, spleen and eyes, as has already been stated. As regards their colours, blood is red and phlegm is white; there are seven types of yellow bile (yellow, which people call basic, pale-yellow, red, leek-green, yolk-yellow, verdigris and woad); whilst the proper tint of black bile is of olive oil.

Blood is sweet to the taste; yellow bile is bitter; black bile is sharp; phlegm is ordinarily neutral, but it can also be salty, sharp and frequently sweet. There are four different types of black bile: one in the blood's sediment, another when yellow bile is overheated, another called 'tarry' because it has the shine of bitumen, and another by nature resembling blood. Further details can be added: blood and phlegm are by consistency thick, as is black bile. Yellow bile is thin, light and buoyant. The other two humours are heavy. Blood commands a central role in the distribution of heat.

It seems that health is characterised by the equality and symmetry of these humours. Diseases occur when the humours decrease or increase contrary to what is usual in terms of quantity, quality, shifting of position, irregular combination or putrefaction of whatever has rotted. Just as it can be said that diseases occur as a result of an excess of the humours, so health returns by means of the removal or of the addition of the humours, their thinness and thickness, and generally through their mildness and symmetry.

Hippocrates put this extremely neatly in the sixth book of his *Epidemics*: you should eject some humours by force, put some humours in, thin and temper the humours in one case, but not in another, for they furnish the sequence of remedies according to the cause of the disease.² The humours must be mixed precisely in quality and equal in quantity, so that health when prevalent may persevere, but when absent may be summoned. This is why they are called humours, because at the same time they aid humectation. It is clear that, if this is health, then such a condition is not disease, as has been shown. Since the types of disease are divided into different kinds, the differences in kind must be advanced from among the different causes. Humours are both causes and symptoms: the former is what occurs externally, the latter is what is meant by increase and decrease, that is, as has been stated before, according to age, time and the effect of diet, whenever these are radically changed.

This is what Hippocrates seems to be saying when he states that some humours flourish and prevail at one time, others at another time, adding that different complexions are due to the predominance of whatever humours are prevalent in a particular temperament, and that diseases arise according to the nature of the dominant humour in an individual. Moreover, in the introduction to his work *On Humours* he says: 'the colour of the humours, when they are not disturbed, is like that of the flowers'.³

The predominance of the humours generally changes according to the passing of the various stages of life, just as it seems the characteristics of the soul change. Even that is delineated by the humours. Blood causes a cheerful nature; yellow bile a nature that is angry, insolent or fierce; phlegm a lazier and more stupid nature; black bile a nature that is more impetuous and angry. The character of the soul can be altered in diseases through the kind of humour that is dominant, as in the case of delirium. All diseases that come about because of blood are accompanied by singing and laughter, whilst all those that come about through yellow bile follow rashness and bitterness. This is why Hippocrates also said: 'Derangements of the mind with laughter are less dangerous, but when combined with seriousness they are more so.' He was referring to seriousness here as boldness. Again, all characters that are based on black bile are more silent, cultured and feature sad faces; conversely, all characters that have phlegm as their foundation are frivolous and unsettled.

Hippocrates stresses this elsewhere, for example in the first book of his *Epidemics*, when Silenus was deranged with singing and laughter. In the third book of his *Epidemics*, he mentions that a bold delirium occurred in the case of Philiscus: 'for he went mad around the middle of the day'.⁴ Yellow bile was the cause of the disease. In Cyzicus he says that a woman who had given birth to twin daughters went mad, and that her delirium was characterised by a sullen and despondent face, since she fell silent and did not listen to anyone.⁵ Black bile was the cause of her disease. He says that Pithion, who lived near the temple of the Earth, became delirious and went mad. In this case the cause of the disease was phlegm.

The person who administers care should know the multiple causes of these diseases. As Hippocrates says, if you know the cause of a disease, you can apply whatever is beneficial for the body from the remedies that will combat the disease. With diseases, whoever as regards healing wants to pose accurate questions, to reply correctly to anyone asking the same, and to contradict effectively must consider the following: first, what the causes are of diseases, which will allow for the promulgation of the reasons, so in the case of age, an adolescent falling ill will be particularly affected by the blood, as of course was shown earlier; second, the time of year, for in spring the blood is especially troublesome; third from diet, for one drink or food is productive of one humour, another of another humour, so for example blood follows on from drunkenness and gluttony. This is what Hippocrates determined when he learnt that Silenus had become ill after drinking. He mentions too the wife of a gardener who had suffered menopause as a consequence of her excessive eating. Fourth from place, if in fact a hot place effects hotter diseases; fifth from eruptions, for bloody pustules are

red and round, phlegmatic pustules are flat, and other pustules otherwise, just as Hippocrates says in his *Aphorisms*, where heat spots are shown to come about in spring and summer, since they are the result of blood and bile; and finally from colour, where the cause of a disease may be diagnosed as from the predominance of a humour.⁶ This is no less than the most accurate way of reaching the best diagnosis, a system believed by Diogenes and his learned contemporaries to be akin to divination. These physicians discussed the colours at great length and divided the diseases according to their different appearances: the red, the bloody, and the flame, in which bitterness was excessive; and the black and the white, sufferers of which were called phlegmatics. The diseases resulting from these humours were called red, flame, black and white; but I do not understand how, by omitting so many pieces of evidence for the medical art and especially those which afford an accurate assessment of the diseases, they could assign the complete categorisation of the diseases to colours alone.

It is evident that the best method of diagnosis is to consider all the symptoms of the disease in question, and not to limit the inquiry to one or two particular points. If you wish to know whether a man has a fever, it is not enough to ask him if he has a fever; you must also inquire whether he has a headache, a sore throat, a feverish skin, a flushed face, a red tongue, a dry mouth, a rapid pulse, etc. In this way you will be able to determine the cause of the fever, and to prescribe the appropriate treatment. It is also important to remember that the symptoms of a disease are not always constant, but may change from time to time. For example, a patient with a fever may have a headache in the morning, but not in the afternoon. Therefore, it is essential to take a full history of the patient's symptoms, and not just a brief summary. This will help you to make a more accurate diagnosis and to prescribe the right treatment.

3

ON BLACK BILE

Black bile is a topic over which some have spent far longer than is needed for the art of medicine, whilst others instead have hesitated to promote any decent length of exposition, just as some have said nothing at all.¹ It is this last category of people that is more at fault than those who add useless information, because it is easier to cut out excess verbiage than to search for whatever has not been mentioned. Following this line of thought, Hippocrates seems to me as a prime example of someone who includes all that is vital for the conduct of this art, just as conversely Erasistratus is a prime example of someone who leaves out everything.² I think that the pupils of Plistonius, Praxagoras and Philotimus, who discussed the humours in the greatest detail, usefully define some of what was only sketchily described by Hippocrates, although over some of his other ideas they argued erroneously.³ Of the more recent writers, the best books that have been written about black bile are by Rufus of Ephesus.⁴ You could say with good reason that Rufus wants nothing more than an attentive audience, not those who contradict purely for the sake of an argument, a habit which is prevalent among quite a few modern doctors, particularly those who describe themselves as Methodics or Erasistrateans or Asclepiadeans.

Some of these doctors have devised captious arguments which try to prove that any discussion about the humours is useless for medical requirements. My intention is therefore to consider what exactly is useful, as I usually do, and then turn to whatever follows on logically from this. I shall not hesitate in my conclusion to do away with any of those arguments which have been propounded by people who hold that the theory of the humours is worthless. To avoid loss of clarity during my discussion, I shall take just one name for each humour and so try to describe them throughout in these terms. However, I cannot do this properly without delineating the outward appearance of the humours. I shall do

ON THE POWERS OF FOODS

Book 1

Introduction

A considerable number of the most outstanding physicians have written about the powers of foods. Yet they have set down their ideas in a great deal of haste, even though this is probably the most important of all medical subjects. For other remedies are not always used at every possible opportunity, but without food it is impossible to live either in health or in sickness. It is therefore reasonable that the majority of the best physicians should determine to ascertain the powers in nutrition, some of them making statements based on practical knowledge alone, others wanting to make use of scientific theory too, whilst a few put all the emphasis on just theory.

If in these writings it was the case that there was a general agreement about food, just as there is about geometry and arithmetic, there would be no point in me now writing statements about these things to supplement so many worthy gentlemen. But since in their quarrels they have viewed each other with suspicion (for it is impossible for them all to be telling the truth), it is essential for impartial judges to be appointed to test what they wrote, because it would be wrong to believe only one person without any proof.

There are two initial stages of proof (since every means of proof and persuasion arises either from perception or from rational thought), and I must use either one or both of these for the answer to the question that presents itself. Seeing as decisions through reasoning are not easy for everyone in the same way, because a knowledge of their nature is essential, it is better and preferable to begin with experiment, because through this means alone not a few of the doctors have declared that they have discovered the powers of foods.

The practical efforts and studies of the Empiricists are perhaps to be

ridiculed since they work to make capital out of contradicting whatever has been discovered through argument; although Diocles belongs to the Dogmatists, he nevertheless wrote in the first book of his work *On Health to Pleistarchus*:¹

Those who presume that everything that is similar in juice, smell, heat and so on all possess identical powers are mistaken: for anyone can detect the dissimilar in what is similar. Of course regarding laxatives, diuretics and anything else with some other power, it must be supposed that each exists on its own, since not all sweet, bitter, salty and the rest have the same powers; but the whole of nature must be considered as the reason why this generally happens to each of them. Taken this way the truth can hardly be missed.

Those who believe that in every case they must explain the reason why each food is nourishing, laxative, diuretic or the like appear to be unaware first that this is not necessary every time for their use, and secondly that many things that exist are in their origins naturally alike, so that they do not admit to an argument based on reason. Moreover, quite often they grasp things that they do not understand, which are not agreed upon, and which are unlikely, and make mistakes when they feel that they have explained the reason satisfactorily. It can be concluded that there is no need to listen to those who propound reasons in this way and think it is necessary to give a reason for everything; instead trust should be placed in the discoveries achieved over the course of time. Where possible the reason must be sought, since it is the intention that whatever is said on this subject should be intelligible and reliable.

This is what Diocles said when he became convinced that he could understand the powers in foods through just one experiment and not from an indication either of the temperament or the humours. He makes no mention of any other substance in the parts of plants. By this I mean indication about the parts of plants, which Mnesitheus shows that, in addition to their other properties, some powers reside in the roots of plants, others in the stalks, just as other powers are in the leaves, in the fruits and in the seeds.

Everyone knows, even if they only have a little intelligence, that experience serves as a teacher, just as of many other things, so too of which foods are easy or difficult to digest, which are helpful or harmful to the

stomach, and which are purgative, laxative or costive of the bowels. Those who believe that they can conduct an experiment without guidelines make no small error in this particular area, as has been shown in my work *On Simple Medicines* and in the third book *On the Temperaments*, the mistakes being equal on each side. So in this book I will state my definitions carefully, just as I did in those books, in which anyone interested can find without problem their particular powers, although not according to my original plan, which was to write about each subject just once, whilst not running through the same things about them in lots of treatises.

This is my usual method, and I do not intend abandoning it now, since I will use only the main outlines of the definitions, by means of which it should be possible to mix conciseness with clarity. Since it has not been accurately described by Erasistratus, I will start from that fact which everyone has on their lips: that a blend of honey and milk does not relax the stomach for everyone, nor do lentils check it, but that there are some people who, besides experiencing neither of these two effects, yet fall into what is opposite, so their stomachs are checked by a blend of honey and milk, but relaxed by lentils. Some people are even found who can digest beef or rock fish with ease.

I myself have always asked these people – for I will begin with the final category – what the nature is of the symptom which reveals the indigestibility of rock fish, since there seems to lie in the bowels a weight like lead, stone or clay (at least this is how some people report the feeling in such cases of indigestion); or else there is evident a definite biting sensation in the bowels, or flatulence or a sensation of unpleasant belching. After that some people have said the belching has become greasier, others the biting, others both. By carefully examining the physical state of these people, I have found that a lot of yellow bile has collected in their bowels through some bad temperament or peculiarity of their constitution.

I say ‘peculiarity of constitution’ when the bile in some people flows down to the bowels from the liver and returns to the bowels; but I say ‘bad temperament’ when there occurs by nature a bitter and biting heat that is, one could say, like a fever. Understandably these people digest foods that are not easily spoilt more than foods that are easily spoilt, since things that are easy to digest are easily changed and spoilt, but things that are not easy to digest are difficult to change and are not easily spoilt. In fact these things, whenever they are in contact with a lot of heat, are digested better than when they are close to a stomach that has a moderate amount of heat. So according to this system some people digest beef more easily than rock fish.

Yet with some people lentils upset more than check the stomach: this has been explained by me in my books *On Simple Medicines*, for just as

some of the medicines I prepare are composed of contrasting substances and powers, so in the same way not a few of what appear to be simple medicines are compounded by nature. Such is the case with many foods too, for it is not just lentils, but also cabbage and the seafood called shell-fish which have a nature composed of contrary powers.

Thus the solid part of each of these is hard to pass and constipates the stomach, whilst their moistness encourages it to evacuate. A clear proof comes from cooking, since the water, in which each of these things has been cooked, empties the bowels, although their bodies check. On this subject you can hear some people saying that, if before other foods you eat a cabbage that has not been cooked for too long, and you transfer it as a whole from the pan to a pot containing olive oil and fish-sauce, it will move the bowels; but you will hear of others preparing a dish for checking the bowels which carries the name of twice-cooked cabbage.

The recipe for this sort of cabbage is as follows: boil the cabbage in water, carefully drain off all this water from the pan, add more hot water, boil the cabbage a second time in this to ensure that if any of its own moistness is retained after the first boiling, it will be removed. Everything boiled in water experiences a shift of its own power and also a transfer of the power belonging to itself and the water. It is essential for you to realise that this occurs every day with things that are cooked in sauces, whether some pulses are being boiled, or part of an animal or a vegetable. Whatever has been boiled reveals through its taste and smell the quality and power of the sauce, whilst the sauce discloses the quality and power of what has been boiled in it.

You can test the truth of the whole argument that has now been set out in front of you like this: if you boil lentils or cabbage or one of the sea foods which I have just mentioned, then season the dish with olive oil, fish-sauce and pepper, and then serve it to whoever wants it as you would with cabbage that has been boiled twice, you will observe the liquid passing through the bowels, but the solids closing them.

It is not surprising that, on occasion, colic and flatulences are caused by such foods, whenever the whole of their solid part is eaten at the same time as their juices. For this results in a struggle between each other, the solid part of the food clinging and moving slowly, the moistness promoting evacuation. So if the biting sensation is removed, the symptoms stop; but while it remains, the bowels are bound to be subject to colic and flatulence. The limit to all of this is the evacuation of whatever is causing the disagreement.

Since for some people the stomach is ready for evacuation, but for others it is dry and constipated, each stomach derives its symptoms from

these foods according to its individual nature, seeing as it is sometimes assisted by the power of the juice, at other times by the power of whatever is solid. These two effects are set up in opposition to one another, with one bound to follow up its victory, the other yielding. This occurs in accordance with certain conditions of the stomach which are not innate, but happen at a particular moment. Sometimes phlegmatic juice collects in the stomach, at other times bilious juice. The phlegmatic can be sharp, salty, sweet, without any perceptible quality, moist, thick, viscous and easily dispersed.

The bilious can be yellow, pale, and holding overall more or less each of these, so that I will leave aside the other biles in the bodies of those who are already ill. Each of the juices I have mentioned is either readily disposed towards the evacuation of the stomach or to its checking, and whenever the whole of the solid parts of the foods just described arrive in the bowels together with their particular juices, they either help towards whatever has the same power, or act against whatever has the opposite power.

The two reasons according to type for the different appearance of foods when digested in the stomach have been explained before. But now a third reason has been found to add both to the natural state and to the moist and solid parts of whatever is eaten. It does not matter whether whatever is eaten is called either provender or food. In fact people use these terms no less than foodstuffs and edibles. Thinking of which, Hippocrates wrote in his *Epidemics*: 'You should test foodstuffs and drinks, to see whether they remain for an equal length of time'.² And again in another passage: 'Physical work, food, drink, sleep, sex: all these in moderation.' Nomenclature should not cause any problems, as I keep saying, because all of these names can be used, since the Greeks are conversant with every one, but pursuing an understanding of practical problems does matter.

Foods seems to have a swift or slow passage through the body depending on the constitution of the stomach at the outset, or a condition that is acquired. I am talking of what is eaten and drunk, since some of these things are moist, others dry, some slippery, others friable and easily broken down, some containing an element of pungency, others sharpness, bitterness, sweetness, saltiness, harshness, astringency or, beyond these properties, some medicinal power with the general character of a purgative drug.³

Through their viscosity and moistness orach, beet, mallow and gourd pass through the bowels more quickly than anything without these properties, particularly in those who take a gentle walk after eating them, for

they slide down more easily when shaken than if one reclines without moving.

In this category lie mulberries, sweet cherries and those wines which are sweet and thick. Watermelons and what people call melons are suitable for evacuating the bowels because of their moistness and slipperiness. In fact watermelons contain a moderately purgative property, melons even more so, which can be understood by rubbing a dirty part of the body; for they remove the dirt from it immediately, and they are also diuretic.

Among the foods that are moist and watery in constitution are apricots, peaches and in short all the foods that seem to have nothing by way of smell or taste to mark them out. These foods are easily passed, if the stomach is ready for evacuation, but if not, they remain undigested and do not help evacuation in any way. For whatever makes up these foods lies midway between the costive and the laxative, although there is a tendency to swing a little to one action or the other, depending on whether the stomach is in no way ready for evacuation or is vigorously engaged in assimilation, for sometimes these activities check the stomach.

A blend of honey and milk does not encourage an evacuation of the stomach in those cases where it races to be assimilated, but it does assist with the digestion of foods mixed with it. But if this blend is in no hurry to be assimilated quickly, it encourages evacuation, seeing that yellow bile is included with it because of its bitterness and biting effect. These sorts of food and drink, since they are only biting, encourage the parts in the bowels to evacuation.

It is evident that the substance of the intestines is subsumed under the term bowel.⁴ So the general public in fact give this term to pot-bellies and paunches. Some substances relax the stomach as they have medicinal powers mixed in them, so for example scammony, large gourds, hellebore and all other such things; for their nature is a mix between food and medicine, exactly as if a small amount of scammony juice should be put into barley water.⁵ Although their sensation fails to be noticed, their action does not remain hidden, but clearly relaxes the stomach.

This appears to be what Hippocrates meant when he said: 'In food medicine'.⁶ Thus it is good not only to lend an ear to these ideas, but also the argument can be explained from those foods that possess no nutritive or purgative quality. For they say that these things not only serve frequently as foods, but also as medicines by heating, moistening, cooling and clearly drying us; just as consequently, when none of these things is active in the human body, but is only feeding it, this would not be included under the topic of medicine.

There are very few foods of this sort; but all that are like this only hold the category of food properly by not changing the body in quality when ingested. For whatever has been heated, cooled, dried or moistened is altered in quality, whilst whatever derives from foodstuffs in terms of weight as their substance is assimilated, is used only by foods themselves.

So everything of average temperament has no pronounced quality: it is only a food, not a medicine, since it does not relax the bowels, or check, strengthen and evacuate the stomach, just as it does not encourage, or even discourage, sweating and urination, nor does it set up in the body any other condition of coldness, hotness, dryness and wetness, but in every way maintains the body nourished in the same state that it was encountered. At this point some sort of distinction in between a food and a medicine is vital, although not the one delineated by Diocles, nor indeed any of the others that I have so far discussed.

For if the human body should really be average in temperament, it should be kept in its present state by nourishment that is of average temperament. If, on the other hand, it should be cooler, hotter, drier or wetter, it would be wrong to serve food and drink that was average in temperament, because it is necessary for each of these bodies to be shifted in the opposite direction by as much as they depart from the genuinely median state. This will be by means of whatever is the opposite to the existing bad temperament.

The opposites occupy a position as equally removed from the median as their counterparts are on the other side, so that, if the body happens to be shifted by three degrees from the harmonious and median state towards something hotter, it is important to leave off by the same amount food that is median for food that inclines towards what is cooler, but if it moves by four degrees towards what is moist, then food that is drier than the average is required in equal proportions.

With this it is of course again possible to find many completely contrasting expositions on the same foods. In fact just recently two people were having an argument with each other, the one declaring that honey was healthy, the other that it was harmful, each offering as proof whatever the honey had done on an individual basis, but ignoring the fact that not everyone has the same temperament at the outset. For even if they do have just one temperament, they cannot preserve it unchanged throughout the stages of life, just as similarly they cannot preserve it through changes of season and place.⁷ So I will leave aside for the time being how these people alter the natural states of their bodies by their way of life and their diet.

To return at once to the argument about honey, the older of the two

was by nature rather phlegmatic, lazy in his way of life and towards all other activities, not least the exercises in the public baths, which was why honey was beneficial; by nature the other was choleric, aged thirty, and worked out a great deal with exercises every day. Understandably in this instance the honey quickly turned to bile, and thus was very harmful.

I personally know of someone who complained about the area that is around the mouth of the stomach, and I reckoned from his description that phlegm had collected at this point, and so I advised him to eat his food with mustard, leeks and beets, since phlegm is cut by these foods. He excreted a great deal of phlegm from his stomach and was completely cured of his complaints. But then conversely he suffered from indigestion after eating biting foods and felt biting pains in his stomach. He had eaten mustard with beet, and not only was he taken unawares by the biting, but also was made considerably worse. He was of course amazed that he should be hurt so much by what had before been so beneficial, and he came to me to find out the reason.

It is natural for anyone not versed in the art of medicine to be baffled by these facts; but it is unpardonable for doctors to leave many of the most useful theories undefined. For it is not right for them simply to say first that rock fish are easily digested by the majority of people, then that they have found some people who can digest beef with ease, but rather to distinguish both groups; just as indeed it is not right for them simply to talk about honey, but to add in the middle of this for which stage of life, nature, season, place and way of life it is beneficial or harmful. For example, that it is completely opposed to hot and dry things, but is most beneficial to wet and cold things, and whether this sort of person has the temperament because of age, nature, place, season or a particular lifestyle.

It appears absolutely essential for the present discussion to examine the temperaments both in humans and in foodstuffs. A full list of human temperaments and how they must be distinguished has been written in my work *On Temperaments*, and similarly as regards medicines in *On Simple Medicines*.

For the moment it is the ideal opportunity to mention the temperaments of foods, as has been set out in the book on diet that some people ascribe to Hippocrates, others to Philistion, or Ariston, or Euryphon, or Philetus, all ancient authors.⁸ According to some editions it begins as follows: 'It is vital to discern like this the power of each type of food and drink, both that which comes from nature and that which is acquired through art'. And in other editions like this: 'It is vital to discern like this the setting and nature of each place'.

When this book is circulated by itself, it is entitled *On Diet*, although there is a second section, seeing as the work as a whole is divided into three. When the complete work is found in one undivided volume made up of three sections, it is entitled *On the Nature of Man and Diet*. The second section, in which foods are treated, might perhaps with good reason be thought worthy of Hippocrates; but the first section very often strays from Hippocratic doctrine. But let this be said as a kind of side-track. Yet whoever it is of the writers mentioned, it seems that diet with respect to foods refers back to one system in general.

For whoever knows that barley is by nature cold and moist even when boiled, also understands how to recognise the temperaments of the body, both those that occur naturally, and those that come about through some acquired condition; and how to use barley effectively for consumption, not just with healthy people, but with those who are ill too; and how to employ poultices made with barley flour properly. That is what the person who understands temperament can do.

Not only the principal and primary temperament of each food must be known, as has been shown in my work *On Drugs*, but also the temperaments that stem from them. Essentially many of the useful temperaments, if not all, happen to reside in the juices, but some are also in the smell. For from the blending of so much heat, cold, dryness and wetness come their sweetness, bitterness, saltiness, astringency, harshness or sharpness.

Salt signifies nothing else besides saltiness, but one fact is explained by two words, just as astringency and sharpness are included under the generic term astringent. Every flavour is discussed at length in the fourth book of my work *On Simple Medicines*, and it is absolutely essential for anyone who is about to follow what is written here to read that book, so that I can avoid having to say the same about these things in this work.

Some foods, as I said a little before, exhibit no distinct quality regarding smell or taste; they are in fact called inert and watery. But other foods have a very obvious astringency, innate sweetness or bitterness, just as indeed some appear rather salty and others have a clear element of bitterness. It is obvious that such foods have in them the same power as medicines, which they resemble in flavour. The reason why some astringent substances do not have the same effect as other astringent substances is discussed in my work *On Medicines*, for example bitter aloes, burnt copper, copper sulphate, copper slag, flaked copper and rock-alum.⁹

For by mixing these things on their own with something that has an astringent substance their effectiveness is changed. This is the case if scammony is mixed with quince, which I do of course on occasion, the core around the seeds being removed and the hollow which is thus

created being filled up with scammony. After the fruit has been wrapped in dough, it is baked and given to eat. When prepared like this it loosens the bowels without upsetting the stomach, since what predominates is the cathartic effect which the fruit takes from the scammony, whilst the particular characteristics of the fruit remain, because when prepared properly it appears neither harsh nor sweet to the stomach.

Therefore a few of the things that are eaten have some power inherent in them which is either laxative or the cause of another effect. In this respect there is no need to disbelieve the powers of their juices, since they succeed in whatever they naturally have to do. However much astringent quality exists it contracts, squeezes and cools the neighbouring bodies by the same amount. But the same body can, on occasion, have constituent parts that are heating, and some that are cooling, just as I showed in my book *On Simple Medicines*, since these qualities are mixed together by nature like this, and also a few doctors sometimes mix pellitory or pepper with one of the heating things. These facts, as I stated in my work *On Simple Medicines* in the fullest detail, are extremely useful for what is being taught now.

The recipes for each food in turn can be found from those who already know about these things. So I sometimes serve a dish of beet and lentils, and before me Heracleides of Tarentum often used to serve it without any trouble both to healthy people, and also to those who were rather ill.¹⁰ First I put in plenty of beet, next after seasoning it either add a little more salt or sweet fish-sauce, because then it is more laxative. If after removing their husks you boil lentils twice – since you must discard the first lot of water – and then add some salt or fish-sauce, you can also mix in a little of those things that check a stomach but do not ruin the overall taste. In this way you will make a pleasant, but extremely useful medicine, which serves as a food for quite a few people who suffer from chronic diarrhoea.

For in general nothing can be tested properly through experience without first discovering the precise reason for the condition, with which whatever is being tested is connected, whether it is food, drink or medicine. For the substance of remedies provides the knowledge for conditions of this kind, but not the actual remedies. Since it is impossible, without a precise knowledge of their powers, to help people who need those substances which we use, it is necessary at this juncture to discuss the powers in foods, just as elsewhere we discuss the powers in drugs.

What can only be recognised with difficulty after some considerable time spent in motivated experience is the nature of vapours and humours: whether they exhibit what is being examined, in addition to their

consistency, which is realised in their viscosity, looseness, sponginess, compression, lightness and heaviness. All these things contribute to their own discovery, so that if, on arrival in a foreign country, some food is seen that has not before been observed, many clues will be available for the recognition of its powers.

What Mnesitheus wrote about roots, shoots, leaves, fruits and seeds certainly does not have a firm basis in thought, if it is judged according to defined experiment, as will be revealed by what follows.¹¹ For I am conscious of discussing each food individually. Yet if my work is rather too long or has the potential of becoming so, I can of course summarise it in a second much shorter book, which will be of use to those who are learning medicine, because only practice and training through detailed exposition will produce skilled practitioners.

For this reason I believe that most people are right in saying that the best teaching comes about through direct communication, because it is not possible to see a captain of a ship or a practitioner of another skill emerge from a book. For books are memorials to erstwhile scholars, not perfect training manuals for the ignorant. But of course if anyone lacks a teacher and wants to read carefully what has been written clearly and in the sort of detail that I employ, then great benefit will be derived, especially if there is no hesitation over frequently revising these things.

Wheats

It seems quite understandable to me that the majority of doctors should begin what they propose to explain with wheat, seeing as this grain is by far the most useful and most used among all the Greeks and most foreigners. The most nourishing wheats are those that are hulled and whose whole substance is dense and compressed, so that they can only be broken by the teeth with difficulty. These wheats furnish the body with a lot of nourishment from just a little volume. The opposite of these wheats can be broken up easily by the teeth, appears loose in texture and spongy after chewing, and furnishes little nourishment from a large volume. If you want to compare an equal volume of each wheat, you will find the compact wheat far heavier.

In colour, these are more yellow than the spongier wheats. Their nature should be tested, not simply by examining their outward appearance, but by cutting them open and breaking them in pieces, as has been stated; for many wheats on the surface appear light brown and dense, but inside are observed to be thin, spongy and pale. Such wheats contain a lot

of bran and if, after milling, the finest flour is sieved off and from what remains a bread is made (which is called bran-loaf), it will be proved that they contain little nourishment and generate a great deal of waste in the body, and for this reason they are easily passed. At the same time, on account of the purgative nature of the bran, their passage through the body is understandably swift, because they stir the bowels to excretion.

Contrasting with these are the genuinely white breads that manage a great weight in a constrained volume. They are the slowest of all breads to pass. You will notice that their dough is particularly sticky, so that it weighs most when unseparated, which is something that is peculiar to a sticky body. These breads of course require more yeast, must be kneaded most of all, and should not be baked immediately after rising and kneading. On the other hand, bran-loaves only need a small amount of yeast, light kneading and a short time in the oven. Thus white breads must have a longer time in the oven, bran-loaves a shorter time. There is a considerable difference one way or the other between the whitest and the darkest breads, since some are called and really are white, whilst others are dark.

There is also a type of bread that is precisely halfway between these breads. It carries the name of wholemeal bread, although doctors in the past called it unrefined. It is made from unsifted flour, or in other words from the plain flour from which the bran has yet to be separated. From this derives the name, since every bit of the wheat without any separation is used to make wholemeal loaves, whilst unrefined bread is so called because unrefined flour is gathered together for its manufacture. But even with these breads, which seem to be positioned between breads made with bran and perfectly white breads, there is a considerable difference regarding the nature of the wheat, because superior breads come from compact and heavy wheats, but inferior breads are made from wheats that are porous and light.

Among the Romans, as among nearly all the people whom they rule, the whitest bread is called *silignites*, whilst that which is not quite so white is called *semidalites*. However, *semidalis* is an ancient Greek name, but *silignis* is not Greek, although I cannot think of another term. The most nutritious bread is *silignites*, then comes *semidalites*, in third place comes bread from partially unbolted flour, whilst the fourth place is occupied by bread made from unsifted flour, of which bran bread is the most extreme, and this lacks anything nutritious as well as being more purgative of the bowels than other breads.

The breads that are best for the digestion are those which contain plenty of yeast, have been kneaded very well, and have been baked in an

earthenware hearth tile with a moderate fire. For a stronger fire as soon as there is contact immediately bakes the outside to a burnt shell, and the bread becomes bad in two respects, because the crumb is raw and uncooked, whilst the crust is overbaked, dry and resembles a shell. A fire that is less than moderate does not finish the bread off well, but leaves it rather undercooked, particularly the whole of the crumb. All breads that are fully and evenly baked with a moderate fire for a longer time are digested extremely well in the stomach and are also most valuable through the subsequent energy. The worst types of breads are obviously all those that share none of the aforementioned properties.

The defining limits of what is good and what is bad in these breads is not difficult for anyone to grasp (even without me), some breads being close to the best sort or the worst, others being further removed, and some others, as has been said, straddling the midway point between the two. As I stated before in the case of honey, one must not simply set out what is good or bad for the health, but what is valuable for a phlegmatic nature. In other words, what is valuable for a nature that is wetter and colder than the ideal mixture, even if it is only colder without any more moisture, or wetter without any more coldness. But it is not suitable for hot temperaments, still less for temperaments that are hot and dry. So any bread that is not properly baked is suitable for an athlete, since it does not contain much yeast, whilst anything that is well-baked in an oven is suitable for an ordinary old man, since it contains a lot of yeast, whilst whatever is completely without yeast is of use to no one.

If you add some cheese, as is the habit of the farmers who live round me when celebrating a festival, and these breads are what are called unleavened, then everyone is harmed, even if they are the most healthy of reapers and diggers, and yet these people seem even better than sporting heavyweights at digesting unleavened bread, just as beef and goat too. Why must lamb and goat be mentioned in addition to these foods? In Alexandria donkeys are also eaten, whilst some people eat camels. It is partly habit that contributes to their digestion, partly and not negligibly the small quantities that are eaten, and the hollowness of the whole body that is an inevitable consequence for those working the whole day in their own areas of activity. For the empty flesh seizes from the stomach not just partially digested juice, but also on occasion completely undigested juice, whenever it is struggling for food, and as a result these people later catch the most intractable diseases and die before they are old.

The ordinary people in their ignorance thank the strength of their body, since they see themselves eating and digesting what none of us would be able to take and digest. As most of those who are engaged in

manual labour sleep very heavily, something that contributes greatly to the digestion, they are consequently harmed less by bad food; but if they are forced to stay awake for several nights in a row, they immediately fall ill. These people therefore possess this one advantage in the digestion of bad foods.

On the other hand, athletes eat foods containing good juices, although the heavyweights among them take thick and viscous foods. Wrestlers in particular are called heavyweights, but also boxers and all-in boxers and wrestlers. Since the preparation for the contests is everything for them, during which they are sometimes compelled to wrestle and box for the whole day, they require food that is not easily spoilt and hard to disperse. Such food is composed of thick and viscous juices, especially for example food from pork and (as has been said) specially prepared bread which only athletes customarily eat. If indeed an ordinary individual who does not exercise should partake in such food, the swift consequence will be a plethoric illness, just as if someone who exercises should live off vegetables and barley juice, the whole body will quickly be in a sorry state and waste away.

If one of us eats any of those breads which athletes use, there is an excess of a thick and cold juice which I tend specifically to call 'raw'. There is phlegmatic humour that is raw and cold, but not thick, since it contains a lot of moisture and flatulent wind; in contrast what is specifically called raw juice appears suspended in urine and sometimes looks like pus. However, pus smells bad and is viscous, while raw juice resembles pus only in thickness and colour, since it is neither malodorous nor viscous. A considerable quantity of raw juice is suspended not just in the urine of those who have a fever, as I said, but also in the urine of those healthy people who, after hard manual labour, eat food that is tough and hard to digest.

I shall speak in turn about the other foods, but breads are my current topic for discussion to add to what has already been said by me, since it was my original intention to survey breads first. The best breads are those that are baked under a dome.¹² Their method of baking and the preparations for their baking have been discussed. After these come breads baked in an oven, which obviously use the same recipe, but fall short because their crumb is not cooked like breads baked under a dome. Breads baked over a grill, hot ashes or a hearth tile used like a dome are altogether bad, their composition being uneven: for their crust is overcooked, whilst their crumb is undercooked.

The ash adds a bad element to hidden bread, so called because of being baked hidden in the ashes, which makes it run the risk of being the worst

of all breads in relation to the type of baking, compared to all the others begun in this way. It is essential to pay attention each time to what has been set out like this, since there is only a difference in these things when they are compared one to another. So if in fact a comparison is made between things that are in many respects different, all these ideas that are described individually will in turn form a complete collection of facts. Enough has therefore been said about the differences in breads.

Pastries

Now is the opportune moment to elaborate on the other sorts of pastries that are made with wheat flour. What are called griddle cakes by the Athenians, but girdle cakes by Greeks like me from Asia, are cooked in olive oil. The olive oil is poured into a frying pan which is placed over a smokeless flame. When the oil is hot, wheat flour kneaded with lots of water is spread on top. Fried quickly in the oil, this mixture becomes as firm and thick as the soft cheese that sets in wicker-work baskets. Then the cooks turn it, making what was the top the bottom, so that it comes into contact with the frying pan. When it has been sufficiently fried, they turn it so that the underside is now upperside, and when this has set they turn it two or three times more, until it is certain that the whole cake has been evenly cooked.

This food is, of course, full of thick juices, blocks the bowels and produces undigested fluids. So some people mix in honey with the dough, others sea salt. This is one sort or type (whatever term you want to use) of flat cake which, along with lots of other flat cakes, those living both in the country and the city make in a rough and ready way. All thin cakes that contain no yeast and which are baked in an oven, should be taken out and dipped at once in hot honey so as to saturate them. These are one sort of flat cake, as are all the honey cakes made with wafer biscuits.

Wafer biscuits

There are two sorts of wafer biscuits: the superior is called *ryemata*, the inferior *lagana*. Everything made with wafer biscuits and finest wheat flour has thick juices, is slow to pass and liable to obstruct the passages for food in the liver, exacerbates a weak spleen, produces stones in the kidneys, and yet is reasonably nourishing, if it is digested and converted into blood properly. All those things made with honey have a mixed

power, since the honey itself has a fine juice and comminutes everything with which it comes into contact.

Understandably everything that absorbs a lot of honey in its manufacture, and which is subjected to longer baking, is less slow to pass, produces a juice that is a combination of thick and thin, and is better for the liver, kidneys and spleen – provided that these organs are in good health – than whatever is prepared without honey. But if these organs are at the initial stage of a blockage, either through inflammation or induration, then the cakes made with honey are no less harmful than those without honey. There are even occasions when they are more harmful, especially with those cakes whose flour is rather sticky. The juice derived from these cakes is not only prevented from moving on because of its thickness, but also furs up the narrow limits of the vessels and causes blockages that are difficult to shift. When the spleen is affected in this way, a feeling of weight is created, which requires the help of attenuating foods and drink. This has been discussed elsewhere in my book *On Attenuating Diet*.

It certainly does not harm the chest or lungs when prepared like this. But I have in turn written about the foods which produce thick and viscous juice. My present argument asks you to commit to memory the other matters which I have gone through up to this point, and especially about the powers of breads, since we use bread all the time. In fact there is nothing wrong in reviewing the main points of what was said about breads.

The best bread in terms of health for someone who is neither young nor does physical exercise is that which contains a lot of yeast, a lot of salt, and has been kneaded for as long as possible by the baker, before being shaped and baked. It is cooked in a moderately hot oven, as has been stated before. Its flavour should be your test as to whether it has too much yeast and salt, because the distress caused by too liberal a mixing of these ingredients means bad bread. So as long as ones taste does not register any unpleasantness from the mixing, it is better to increase the quantities of the ingredients.

Refined bread

Those who have devoted thought to the preparation of refined bread have discovered a food with little nourishment, but it does avoid, as far as is possible, the harm that comes from blockages.¹³ This bread is the least thick and viscous, since it is more airy than earthy. Its lightness is

observed from its weight and from it not sinking in water, but rather bobbing on the surface like a cork.

Although the people who live in the countryside around me cook large quantities of wheat flour with milk, it should be understood that this food causes blockages. All such foods that contain good juices and are nourishing, harm those who use them constantly, by creating blockages in the liver and generating stones in the kidneys. For when the raw juice acquires viscosity – whenever the passages through the kidneys are in some people by nature rather narrow – whatever is very thick and viscous is ready to generate the sort of scale that forms on pots in which water is heated, and is deposited around stones in many of the waters that are naturally hot. The temperament of the kidneys is a contributory factor, especially when its heat is fiery and sharp.

In this category lies the scale that forms in diseased joints. For everything superfluous always flows into the weakest areas and causes whatever condition is appropriate to the nature of the individual. There will shortly be a discussion on its complete use in the section about milk, just as there will be one on fattening foods, since there are some other foods that contain the same power.

Groats

Groats are made from a type of wheat. They are fairly nourishing and contain a viscous juice, whether, after being boiled in just water, they are eaten with honey mixed with wine, or with sweet wine or with astringent wine (for each is used at a given time); or whether, they are eaten after being stirred about with olive oil and salt. Sometimes vinegar is also added. Doctors call this recipe groats, adding that the seasoning belongs to barley soup; some suggest that soup from groats nourishes anyone who is ill. But a few of the doctors in the past, like Diocles and Philotimus, gave the name of wheat soup to groats prepared in this way. This is why the term is rarely found in these ancient authors, as for the same reason ‘spring wheat’, because they referred to it by the common term of wheat.

It is stated in the work *On Diet* by Hippocrates that breads made from groats are extremely nutritious, but pass through the body less well; but it is also stated that fine wheat flour and boiled groats are strong and nourishing. So it is right to guard against their excessive use, especially with those whose liver is prone to blockages or who have kidneys that are inclined to generate stones.

It is particularly important to keep an eye on those thin soups made with what are called refined groats. For the juice of groats, when mixed with water, requires considerable boiling. Those preparing it can be deceived: although they think they have boiled it enough, it does in fact cause no little harm to the patients for whom it has been made, because it quickly congeals and thickens through being glutinous. So it must be mixed with plenty of water, boiled over charcoal and stirred frequently, until it has been properly cooked, at which point some salt should be added. Olive oil does no harm, if it is added at the beginning. But this subsidiary discussion is appropriate for therapy, not for the task now at hand.

Whenever at any time those in good health need a drink for severe stomach ache or the passing of much bile, boil groats for a long time until it becomes soft, then stir it and blend it, so that it resembles strained barley juice, and finally give it to drink. The seasoning is the same as for washed groats.

Wheats boiled in water

If I had not at one time eaten wheat boiled in water, I would never have considered there to be any purpose in eating it. For no one, even during a food shortage, would arrive at such a practice, since bread can be made if there is a good supply of wheat. And although chickpeas are eaten at dinner as a side-dish either boiled or fried, as are other seeds prepared in the same way, nobody serves boiled wheat. I would never have expected anyone to have eaten boiled wheat for the following reason.

Once, when I was walking in the countryside far from any city with two young men the same age acting as guides, I came across some peasants who were at that moment making their supper. Their wives were about to make some loaves because they had run out of bread.¹⁴ One of them straightaway poured some wheat into a pot and boiled it. Then, after it was seasoned with a little salt, we were invited to eat. Since we had travelled far and were hungry, it was quite reasonable that we should decide to do this.

So we ate a lot of it, and felt a heaviness in the bowels, as if clay was lying there. Even by the following day it was not digested, so we passed that whole day without food, unable to eat anything because of flatulent bloating, headache and blurred vision. For nothing was passing downwards, which is the sole remedy for indigestion. So I asked the peasants if they ever ate boiled wheat and how they coped with it. They replied that