Book I, Fen I

DOCTRINE I

Chapter 1: The Definition of Medicine.

Medicine is the science by which we learn the various states of the human body, when in


The Canon, like the Isagoge, is a summary of the Galenic medical system, but on a very different scale; Avicenna's book is an exhaustive compilation and systematization of all the scattered knowledge contained in Galen's writings, and it is so successful a clarification that even the modern reader has comparatively little difficulty in following the orderly arrangement and substance of its doctrines. Its first book surveys medical theory generally; its second examines the properties and virtues of all simple (that is, uncompounded) medicines; the third and fourth treat of diseases, of individual members and of the whole body, respectively; and the fifth is an antidotary. Such treatises helped set the tone of Western medicine in the thirteenth and fourteenth centuries; however much they might emphasize the importance of practical knowledge, or the nature of medicine as "art," the effect of their very structure was to favor the logical element over the clinical. Only in surgery—which in any case was tending to separate from medicine during this period—did the empirical approach retain some strength (though see below, pp. 802–806).
health and when not in health, whereby health is conserved and whereby it is restored, after being lost. Although some divide medicine into a theoretical and a practical part, you have assumed that it is wholly theoretical “because,” you say, “it is pure science.” But in fact there are some arts that have both a theoretical and a practical aspect; philosophy has a theoretical and a practical side, and so has medicine. In each of these areas we mean one thing by theory and another by practice. The difference between the two need be explained only in the case of medicine. Thus, when, in regard to medicine, we say that practice proceeds from theory, we do not mean that there is one division of medicine by which we know, and another, distinct therefrom, by which we act—as many, examining this problem, suppose. We mean instead that these two aspects are both sciences—but one deals with the basic principles of knowledge, the other with the mode of operation of these principles. The former is theory; the latter is practice. Theory is that which, when mastered, gives us a certain knowledge, apart from any question of treatment. Thus we say that there are three forms of fever and nine complexions. The practice of medicine is not the work which the physician carries out, but is that branch of medical knowledge which, when acquired, enables one to form an opinion upon which to base the proper plan of treatment. Thus it is said that in case of hot apostemes, the first agents to employ are inifrigradents, insipians, and repellant; then we temper these with mollificants; and, finally, when the process is subsiding, resolvent mollificants will accomplish the rest. But if the diseased apostemes contain matter which depends for its expulsion on the integrity of the principal members, such treatment is not applicable. Here the theory guides an opinion, and the opinion is the basis of treatment. Once the purpose of each aspect of medicine is understood, you can become skilled in both theoretical and applied knowledge, even though there should never come a call for you to exercise your knowledge.

Chapter 2: The Subject Matter of Medicine.

Since medicine considers the human body from the standpoint of how it is made healthy and how it sickens, and since we can have knowledge of neither unless it is known through its causes, we must in medicine know the causes of health and of sickness. Now as health and sickness and their causes are sometimes evident to the senses and sometimes only perceived by means of the evidence afforded by the various symptoms (accidentia), we must in medicine gain a knowledge of the symptoms of health and sickness. It is a dictum of the exact sciences that knowledge of a thing is attained only through a knowledge of the causes and the origins of the causes—assuming there to be causes and origins. Consequently our knowledge of health and sickness cannot be complete without understanding both of symptoms and of the principles of being.

There are four kinds of cause: material, efficient, formal, and final. The material cause is the subject in a state of health or disease—the immediate subject is the members and the spirit (spiritus); the more remote subject is the humors; the most remote is the elements. The latter two are in composition when they are subjects, and are liable to vary. But a certain unity is achieved in the composition and alteration of any such thing composed, and this unity to which the many things are reduced is called either the complexon or the form: complexion in regard to alteration, form in regard to composition. The efficient causes are such as change or maintain the states of the human body. Namely: the air and affiliated agents; comestibles, potables, and the like; evacuation and retention; locale, cities and habitable places; motion and rest, sleeping and waking; the changes at the different periods of life, and in occupations, in habits and customs; and in those things affecting the human body by contact, whether contrary to nature or not. The formal causes are the complexons, the faculties (virtutes) proceeding from the complexons, and the compositions. The final causes are the actions (operationes). A knowledge of these presupposes a knowledge of the faculties and the spirits, which are the subjects of the faculties, as we shall show.

These, then, are the subjects which pertain to medicine. Familiarity with them gives one insight into how the body is maintained in a state of health, and how it becomes ill. A full understanding of how health is conserved, or ill-health removed, depends on understanding the underlying causes of each of these states and of their “instruments”; for example, the regimen in regard to food, drink, choice of climate, regulations regarding labor and repose, the use of medicines, operative interference. Physicians treat of all these points under three headings, as will be referred to later—health, sickness, and a state intermediate between the two. But we say that the state which they call intermediate is not really a mean between the other two.

Now that we have enumerated these groups of
causes we may proceed to discuss whatever medicine has to say concerning the elements; the complexities; the humors, or fluids of the body; the bodily members, simple and composite; the spirits and their natural, animal and vital faculties; the functions; the states of the body—health, sickness, intermediate conditions; and their causes—food, drink, climate, water, localities of residence, exercise, repose, age, sex, occupation, customs, race, evacuation, retention; the external accidents to which the body is exposed from without; the regimen, in regard to its food, and drink; and medicines and manual operations, for conserving health and curing every illness... 

DOCTRINE III

Chapter 1: The Complexions.

The complexion is that quality which results from the mutual interaction and interpassion of the four contrary primary qualities residing within the elements. These elements are so minutely intermingled as each to lie in very intimate relationship to one another. Their opposite powers alternately conquer and become conquered until a quality is reached which is uniform throughout the whole: this is the complexion. Inasmuch as the primary powers in the aforesaid elements are four in number (namely, heat, cold, moisture, dryness), it is evident that the complexities in bodies undergoing generation and destruction accord with these powers. A simple rational classification is into two modes. One is the equable or balanced, in which the contrary qualities are present in the complexion in equal quantities—neither of them being in excess or deficiency. This complexion is the quality which is exactly the mean between the two extremes. The other mode is when the complexion is not the absolute mean between the contraries, but tends a little more to one—whether between hot and cold, between moist and dry, or both.

A complexion, as understood by medicine, is never strictly equable or strictly unequal. The physician should abide by the philosopher who is aware that the really equable state we have defined cannot be found, especially in a human complexion or member. The term "equable," used by doctors in their treatises, does not refer to weight but to an equity of distribution (iusstitia in divisione). It is this distribution which is the primary consideration in the complexion—whether of the body as a whole, or of some individual member—so that the measure of the elements in it, as to quantity and quality, is that which human nature ought to have—both in best proportion and in equity (equitatem) of distribution. As a matter of fact, this distribution of qualities, such as is characteristic of man, actually is very close to true equality...

In saying a medicine is temperate (that is, of equable complexion or temperament), we do not use this expression in the absolute sense, because that would be an impossibility. Nor do we mean that it is attempered correspondingly to the complexion of the human temperament, for in order to be that the medicine would have to be actually composed of human substance. We mean this—that when the medicine is exposed to the action of the innate heat within the human body, its quality will not overreach either of the limits of the range of equable temperament proper to the human being. Consequently it will not produce an effect beyond those limits. Therefore, in regard to its actions within the human body it is of equable complexion). Similarly, when we say a drug is hot or cold, we do not mean an absolute heat or coldness of substance, or that it is hotter or colder in substance than is the human body; for if it were so, a drug whose complexion was like the human complexion would be temperate. What we mean by the statement is that through the drug hotness or coldness comes to the body, over and above that which it has itself. Consequently a medicament may be at the same time cold—that is, compared with the human body—and hot—that is, compared with the body of a scorpion; it may be at the same time hot—that is, compared with the human body—and cold—that is, compared with the body of a serpent. More than that, a medicament may be hotter towards the body of Peter than it is to the body of Paul. It is therefore essential for those who wish to alter a complexion to abandon any medicine which cannot have the effect desired.

Now that we have explained the subject of the temperate complexion sufficiently we pass on to consider the distemperate complexities...

DOCTRINE IV

Chapter 1: What a Humor Is, and What Kinds There Are.

A humor is a fluid moist body into which our aliment is transformed. A good humor is such as has the capacity for becoming transformed into actual body-substance, either by itself or in combination with something else. In short, it is that which replaces the loss which the body substance undergoes. The residue from such, the bad humor, does not do this, and is only exceptionally convert-
ible into good humor. It is proper that it should be expelled from the body instead. ... The humors are of four kinds: blood (the best of them all), phlegm, red bile, and black bile.

In nature the blood is hot and moist, and is either normal or abnormal. Normal blood is red in color, has no unpleasant odor, and has a very sweet taste. When blood is abnormal, it is either because its good complexion has become intrinsically altered or vitiated—i.e. has become colder or hotter—but not from admixture with any foreign matter; or because bad humor is mixed with it. This may happen by a humor coming to it from without, penetrating and corrupting it, or by the production of another humor within it—for example, a part of it might decay, the rarefied product becoming red bile and the denser product becoming black bile, and either one, or both together, might remain in the blood. ...

Phlegm can also be either normal or abnormal. The normal is such as is capable of transformation into blood at any time, seeing that it is in fact an imperfectly matured blood. It is a sort of sweet phlegm which is not very cold; that is, it is cold compared with the blood and red bile, but hardly at all cold compared with the body as a whole. There is also an abnormal sweet phlegm, a tasteless phlegm, which we shall describe presently; which when it occurs is produced by admixture of normal blood—as occurs often in rheums and in saliva. Galen has said that nature prepared no special member as a receptacle for the sweet normal phlegm, as she did for the two biles; for phlegm resembles blood closely in that it is equally necessary for all the members, and they therefore receive it along with the blood. It is necessary for two reasons, one essential and the other accessory. The essential function is twofold: one is that it must be near the members in case they should be deprived of their habitual nutriment (which is healthy blood) by reason of retention of the material, created in the stomach or liver, from some cause. Phlegm is normally acted upon by the natural faculties, which change and digest it and are themselves maintained thereby. The transformation of phlegm into blood is achieved by the innate heat; external heat only putrefies the material and decomposes it. The two biles do not have this function, since unlike phlegm they are not converted into blood by the innate heat; but they resemble phlegm in undergoing putrefaction and decomposition under the influence of external heat. It is secondly essential that phlegm mix with blood so as to prepare it to nourish members of phlegmatic complexion. The phlegm must be present in a definite proportion in the blood which nourishes such members, e.g. the brain. The same is true of the two biles. The accessory function is that of moistening the joints and members which are frequently in motion, lest the heat and friction of the movement produce dryness. ...

Red bile too can be either normal or abnormal. The normal form is the foam of blood, red and clear in color; it is light and pungent. The redder its color, the hotter it is. It is formed in the liver, and then pursues one of two routes—it passes either into the blood or into the gallbladder. That which moves with the blood serves both a necessary and an accessory function: its necessary function is to mix with the blood for the proper nourishment of those members in whose complexions red bile is present in a dispersed form, e.g. the lung. Its accessory function is to attenuate the blood so as to enable blood to traverse the very minutest channels of the body. The part which passes to the gallbladder is also both necessary and useful: necessary because it cleanses the entire body of superfluity and nourishes the gallbladder, useful because it cleanses the intestines of fecal matter and viscous phlegm as well as stimulates the muscles of the intestine and anus, so that they may perceive what they should, and emit wastes. Thus colic very often occurs due to a blockage of the duct from the gallbladder to the intestine. ...

Black bile can also be either normal or abnormal. The normal form is the lees of good blood, its sediment or residue; in taste it is between sweetness and bitterness. It is formed in the liver and then divides into two portions, one of which enters the blood, and the other goes to the spleen. The portion which moves with the blood serves both a necessary and useful purpose: necessary because it mixes with the blood as required to nourish those members in whose complexions black bile is present, e.g. the bones; useful because it draws the blood together, thickens and strengthens it. The portion which passes to the spleen is that which the blood does not require, and there serves both a necessary and a useful purpose: necessary because it cleanses the entire body of superfluity and nourishes the spleen, useful in that by travelling to the mouth of the stomach by a sort of milking movement it tightens, strengthens, and thickens it, and by its bitterness causes a disturbance there, exciting it to hunger and creating an appetite. You must remember that the red bile which passes to the gall-
bladder is something not needed by the blood, and that the part which emerges from the gallbladder is something not needed by that either. It is much the same with the black bile. That part which goes to the spleen is such as is not needed by the blood, and that part which emerges from the spleen is such as is no longer needed by the spleen. And just as the red bile then arouses expulsive forces below, so the black bile then arouses appetitive forces above.

Chapter 2: The Production of the Humors.

Aliment undergoes a certain digestion in mastication. The lining of the mouth is continuous with that of the stomach, there being as it were one surface, and therefore contains a digestive force (virtus). When it comes in contact with something masticated it produces a certain change in it, aided by the saliva acquired in digestion, containing innate heat. That is how it is that when wheat is masticated it brings about the maturation of furuncles and abscesses, but has no such effect when simply rubbed with water, or even if boiled with water. Some say that a sign showing us that food is already somewhat digested in mastication is that previously there is neither odor nor taste in it. Once the aliment has entered the stomach, true digestion goes on—not so much by reason of the heat of the stomach as by reason of the heat of the enveloping members: on the right, the liver; on the left, the spleen (the spleen warms not in virtue of its own substance, but in virtue of the many arteries and veins within it); in front, the abdomen, whose fat easily takes up heat and reflects it back to the stomach; above, the heart, which warms the stomach by way of the diaphragm.

The first stage of digestion yields the essence of the aliment, which, in many animals, becomes "chyle" by the help of admixture with the fluid which one has consumed; this is a liquid substance, of the consistency of a pittance. The portion of this chyle which is thus diluted is drawn from the stomach into the intestines, and then is caused to enter into the mesenteric veins: fine, firm vessels which are found all along the intestinal tract. Through these it comes to the vein called the gateway to the liver [portal vein], enters the liver, and travels along finer and ever finer hairlike channels until it comes to the roots of the vein [vena cava] emerging from the convexity of the liver. The passage of the nutriment through these very narrow channels could not take place were it not admixed with water consumed in excess of the strict require-

ments of the body. When it is distributed through these channels, the liver is almost completely in contact with the whole of the chyle, and for this reason its action is then more violent, stronger, and quicker, and the chyle is digested. In every digestion of this sort there is to be found a foam and a sediment, and perhaps as well something burnt (if the digestion was extreme) or something uncooked (if the digestion did not proceed far enough). The foam is red bile; and the sediment is melancholy [black bile], both normal. The attenuated portion of the overcooked product is bad red bile, and the denser portion bad black bile, both abnormal; and the uncooked material is phlegm. But if the digestion is a proper one, what is formed is blood. As long as it stays in the liver, the blood is more attenuated than it should be, because of the excessive wateriness which is necessary for the reason we have given. But when the blood leaves the liver it is freed from this excessive wateriness, which was needed only for a reason no longer valid. The wateriness is taken from the blood into the veins which go to the kidneys, carrying with it the blood quantitatively and qualitatively proper for their nutrition. The fatness of these fluids nourishes the kidneys; then what is left passes to the bladder and finally to the penis. The good blood passes by the vein leading to the convexity of the liver [vena cava] into the veins branching off from it . . . and eventually on to the hairlike vessels; then the blood sweats out through their orifices and bathes the members, by God's doing. . . . You must remember that hot and cold, among other things, are causes of the production of the humors. When the heat is equable, blood forms; in excess, it forms red bile; in very great excess it forms black bile, due to the burnt residue. Cold produces phlegm and in great excess produces black bile, because of the excessive condensation. . . .

You must know that the blood and that which flows with it undergoes a third digestion in the veins; and when it passes into the members, so that each has received its nutriment, undergoes a fourth digestion. The residue from the first digestion, in the stomach, passes out by way of the intestines; that from the second digestion, in the liver, passes out chiefly by the urine, while what is left goes to the spleen and gallbladder. The residues from the other two digestions are discharged partly as insensible transpiration (resolutionem) and perspiration, and partly in material evacuations: through visible orifices, the nostrils and ears; through the invisible orifices, or pores;
through unnatural orifices, such as open sores (apostemata); or in corporeal growths like the hair and nails.

DOCTRINE VI

Chapter 1: On the Faculties.

Faculties (virtutes) and functions (operationes) are to be distinguished from each other. Every faculty is the source of function, and every function originates in a faculty. For this reason we can treat both in one chapter. Physicians recognize three kinds of faculties and of functions deriving from them: the vital, the natural, and the animal. It is held by many philosophers and all physicians, foremost Galen, that each faculty has its own principal member, which is its seat, and from which its functions emerge. They hold that the seat of the animal faculty is the brain, and that its functions originate there; that the natural faculty is twofold—one aspect concerned with the welfare and preservation of the individual and securing nourishment to it to the end of life (the seat of this aspect and the source of its functions being the liver), and one concerned with the preservation of the race, governing generation and separating out from the bodily humors the spermatic substance (the seat of this aspect and the source of its functions being the testicles); and that the vital faculty is that which conserves the spirit, which is the vehicle of sensation and movement, and makes it able to receive these impressions when it reaches the brain, and makes it capable of imparting life wherever it spreads (the seat of this faculty and the source of its function being the heart). The greatest of all philosophers, Aristotle, holds that the heart is the source of all these functions, though they are manifested in the aforesaid organs—while for physicians the brain is the chief seat of sentience, and each sense then has its own member in which its function appears. But if they consider and judge as they should, they will find things to be as Aristotle said, and not as they thought; and will find their writings to have been drawn from sufficient propositions rather than necessary ones, in which conclusions follow only from appearances. It is not for the physician, as a physician, to decide which of these two judgments is the truth; the philosopher or the natural scientist (physicus) should decide that. It being agreed that these above-mentioned members are the sources of the faculties, the physician is not concerned, while considering medical treatment, to know whether they derive from other sources prior to them or not. However, his ignorance of these matters would not be tolerated in the philosopher.