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MIFTAH AL-TIBB WA-MINHAJ AL-TULLAB THE KEY TO THE SCIENCE OF MEDICINE AND THE STUDENTS GUIDE TO STUDY

by
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(Moslem Iranian physician, poet, philosopher 420 A.H./1029 A.D.)

SUMMARY TRANSLATION
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THE KEY TO THE SCIENCE OF MEDICINE

Ibn Hindū, the author of this work, had previously composed another entitled *al-Mushawwiqah fi al-Madkah ilā al-Falsafh* (A Treatise Encouraging the Study of Philosophy). Because of the ease with which it could be read and understood, the *Mushawwiqah* attracted much attention, and he was thus requested to write another treatise in the same style on the science of medicine. This he did, composing the "*Miftāh al-Tibb*" (Key to Medicine).

The *Miftāh al-Tibb* is divided into ten chapters:
(1) On the encouragement of study of the sciences in general, and the science of medicine in particular.
(2) On the validity of the science of medicine.
(3) On the definition of the science of medicine.
(4) On the nobility of the science of medicine.
(5) On the various divisions of the science of medicine.
(6) On the v
(7) On the methods through which the science of medicine may be grasped.
(8) An enumeration of the sciences which the physician must know in order to be perfect in his art and profession.
(9) On the method by which the student of medicine may make steady progress in his studies, and the proper order of medical books to be studied.
(10) On medical expressions and definitions of medical terms.

SUMMARY OF THE FIRST CHAPTER, ON THE ENCOURAGEMENT OF STUDY OF THE SCIENCES IN GENERAL, AND THE SCIENCE OF MEDICINE IN PARTICULAR

Ibn Hindū begins the chapter with a preface explaining the distinction by the ancients between existent (*mawjūd*) and non-existent (*madūm*). The existent (he writes) is that which performs some "action" (*fi'l*) or which is influenced by some action. Thus if a man neither performs any action nor is influenced by such an action, it is better to call him "non-existent"-for he would be in no way deserving of being called "existent".

The author then deals with the actions of man. He states that man is by virtue of some of his actions in the same class as the animals; such actions include eating, drinking, and other things in which the intellect has no part. By virtue of others, however, he is together with the angels: these include use of the sciences and seeking of the good-for such things are particular to the intellect and require the faculty of distinction (*tamyīz*) and thought.

Man does not raise his station by animal-like actions; he does not raise himself above the level of the beast. Intellectual actions, on the other hand, are of two kinds. One consists of those which every sound human being can perform and which require neither dedication nor practice, such as sewing one's clothes and smearing ointment on one's wounds. Man does not acquire any kind of special distinction through actions

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such as these, for all rational beings have these same abilities. The second kind of intellectual action is that which is achieved only through dedication, effort, and practice. This is again divided into two parts. One consists of those actions which are useful for the inhabitants of cities and which secure for them various kinds of good things. Ability in these is called (for instance) "artisanry", "writing" or "goldworking". The other type of intellectual action is that in which there is no good: for instance when someone develops the skill of climbing up high poles, swallowing stones, or balancing along the tiles of a roof. This they call neither "science" nor "practical art". Through such accomplishments as these man does not reach any high station; he gains nothing by them but the trouble he gives himself.

Thus we see that the sciences and the practical arts are, properly speaking, those things through which man is enobled. They not only place him outside the class of nonrational animals, but separate him from other men who have no knowledge of any science, and lack intelligence. Through science man submits to God, escapes the shame of oppression, and attains the happiness for which he is suited. For God distinguished man through excellence of intellect, and has made this intellect a means through which he is able to life a good life in this world and receive his reward in the hereafter.

There is no doubt that this goal cannot be reached by any one person alone. It must rather be achieved through mutual aid and cooperation. It is for this reason that man has been created "political by nature" (*madanî bi-al-tab*). Man who has gathered together with his own kind in a city must practice the pratical arts and professions. Each one must choose an art or profession so that he may be use to others while deriving benefit from the professions and arts of others. In this way all shall reach the happiness which has been willed for them by God. They shall escape the shame of being a burden for others while not working; the shame of causing trouble to others while not making any effort themselves.

Thus it is incumbent on every individual in order to be considered part of the city, to be attached to one of the practical arts. If he cannot practice a high profession, then there is no shame in a lower one. For the city is like a body, and its inhabitants like the organs of that body. Every organ of the body has its own nobility and excellence, even if the benefit it confers is small-for if it were to disappear, the body would be defective. In the same way, the inhabitants of the city who practice the lowly professions and arts also possess a certain rank and virtue-for if the city were to be deprived of them, it would be defective and incomplete.

As for those who are lazy or who do not work, who rely on their own luck to survive and consider work artisanry beneath them, these have no rank in the city and should be viewed in the same way as a defective organ in the body.

This is sufficient discussion of the value of and respect for the practical arts, and the effort necessary to acquire them. They are, of course, different in their rank and excellence. He who has the ability to the higher degrees should not be satisfied with the lower-for then he would be like a women who can be a lady but contents herself with being a housemaid.

SUMMARY OF THE SECOND CHAPTER, ON THE VALIDITY OF THE SCIENCE OF MEDICINE

The author states that those who are skilled in medicine do not disagree concerning its validity, virtue, or nobility. Even ordinary persons who are of sound mind and possess a degree of insight make no objection to this. There is another group of people, however, who have pretensions to knowledge of the sciences, and a number of the common people in whose nature ignorance is stubbornly rooted, who reject the science of medicine, consider it void, and cause others to neglect it. Through the rejection of medicine these people only confirm their own invalidity, and their envy of scholars! Another group imagines, incorrectly, that for man to strive to bring health to the sick is interference in the predetermined decree of God; it is to struggle against that which God has willed for his servants. Still another group holds that, if medicine were really valid, the physicians would be able to cure all their patients, and that no patient whom they treated would ever perish.

Ibn Hindū here presents a detailed preface in order to establish the validity of medicine, the essence of which is as follows: Corporeal substances (*ajsām*) which are under the celestial sphere of the moon and constitute the four elements. Also composite substances such as animals and vegetables affect and are affected by each other. This is the explanation for the fact that there is faculty (*quwwah*) in each existent (*mawjūd*) through which action and reaction, and affect and effect are accomplished. This force is called "nature" (*tab; tabiah*). God has placed it in every material substance so that change and alteration will result through it in those substances. This is the same force which causes life, death, sickness and health. Thus when we observe the human body we see that as long as the effects of these things and their actions and movements are in a state of balance, it enjoys health and soundness-while if that balance is disturbed the body tends to sicken. If man therefore opposes the state which has overcome his body and has removed it from its customary balance with its opposite, removing that state either gradually or all at once, the body will once

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again regain its health, or at least come close to it. We see that if man carefully observes the effects of these things on his own body and the bodies of others, and evaluates the benefit or harm which each confers, then he can through the principle of analogy (*qiyās*) apply the things which he has observed and understood to similar states which may occur later. Then another person will subsequently make the same observation and analogy in other cases, and thus add the latter to the prior knowledge. This is how the science of medicine is formed; it for this reason that the physicians engage in experimentation through the observation of occurrences and the deduction of their special characteristics. They then put the principles which they have deduced into practice in like cases. It is through this approach that medicine came into existence in India, Persia, and ancient Greece. Thus Hippocrates said: "Life is short, art is long, and opportunity is brief": by which he meant that the life of one person because it is short is not sufficient to perfect the practical art of medicine, and that for this reason one must compose treaties on this art, each recording the results of his deductions so that it develops over a long period of time.

Now we shall begin our discussion of those who deny medicine. As for those who are simply "lazy"-those who deny all sciences simply because of their own lassitude and desire for leisure-we shall not pay any attention to these. Aristotle himself said that one must not dispute with such persons, for they would even attempt to argue against the principles that one must honour one's father and mother, and not kill an innocent soul.

One might even say that those who deny the science of medicine while they see that all kinds of people have benefitted from the advice and instruction of the physicians and have had their illnesses cured by them, deny that which is as plain as the sun in the sky! To those who consider that even to accept the existence of medicine is to interfere with divine decree, we say: then one must not eat when one is hungry, nor drink when one is thirsty, but rather consider that it is God's decree that one should die of hunger and thirst, and that by eating and drinking one interferes with the divine decree and substitutes one's own will for the Will of God. The head of this very fraction, who had a deep hostility toward Abū al-Khayr al-Khammār and used to push others to torment him as well, one day suffered such a headache that he asked abū al-Khayr himself for medicine, Abū al-Khayr replied: "Take the book which you wrote on the invalidity of medicine, and put it under your head for a cure".

As for those who repudiate medicine because of its difficulty, these are ignorant persons who do not understand the extent of the power of the intellect with which God has endowed man. Why do they not ascribe this difficulty to other sciences which are in fact more difficult than medicine: such as astronomy which consists of knowledge of the dimensions of the stars and the measurements of the heavenly bodies and celestial spheres, as well as the movements, actions, and effects of all these? Or why do they not cite music, in which it is necessary in order to properly affect the soul and body to prepare various kinds of musical instruments which the musician has to play in one way in order to produce laughter, and in another in order to produce tears, creating through the same instruments both happiness and joy, and anger and sorrow.

As for those who cite as proof for the invalidity of medicine the fact that some patients perish while under the care of their physicians-these people have not used their intelligence, and have not recognized what the physician is actually responible for. Each practical art has a goal toward which it aims. At the same time it has a subject-matter, in which its actions and effects become apparent. For instance, the goal of the art of carpentry is the making of doors and beds and other similar things, while its subject-matter is wood. Not every piece of wood, however, is suited to become a door or bed. In the same way, the goal of the physician is health, and its subject-matter is the human body. Not every body, however, is suited to the cure of the physician; some examples are the body of a paralytic, a blind, or a bald person. Just as carpentry does not become invalid every time it is found that one cannot make a bed out of a rotten piece of wood, so medicine is not invalid if a blind or bald person is not cured.

Here it should also be noted that there are two types of practical arts. One is that the perfection of which is in the hands of man from beginning to end, such as carpentry and goldworking. The other is that only whose beginning and premises are in the hands of man, while its perfection is under the control of God and nature. An example of the second kind is agriculture, in which the sowing of the seed and irrigation of the fields is under the control of the farmer, while it is God who makes the crops grow. Medicine belongs to this second type. God has placed in the body of each person an agent which preserves its health, and whenever that health disappears through some accidental means, the food and medicine which are the instruments of that agent will drive away the accident from the body and restore its health. This agent the physicians call "nature" (*tabī'ah*) and authorities in religion "angel" (*malak*) : It is that same thing of which Hippocrates said, "Nature itself is enough to cure the patient".

The cure is not solely under physician's control. He gives the body that which is necessary for the preservation of health and the removal of illness, but the actual restoration of good health depends on the effectiveness of nature and the susceptibility of the body.

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SUMMARY OF THE THIRD CHAPTER, ON THE DEFINITION OF THE SCIENCE OF MEDICINE.

Ibn Hindū states that the ancients defined medicine in various ways. The one definition on which all agreed, however, is that "Medicine is that practical art concerned with the care of the bodies of humans which bestows health". The author notes that the definition describes medicine as a "practical art" (*sinā'ah*), rather than a "science" (*'ilm*). "Science", he says, can refer not only to the whole of medicine, but also to each of its separate parts. If, therefore, the term "science" is used instead of "practical art", then we would have to call the knowledge of each part of medicine, "medicine", and the one learned in any part a "physician". Once the term "practical art" is used instead, however, we ensure that it is to be applied only to the sum of all the parts of this knowledge.

As for the condition in the definition which states that the object of medicine is the human bodies, this places other arts, such as carpentry and goldworking, outside the definition: for carpentry is concerned with that which is made of wood, and goldworking with that which is made of gold or silver. The condition concerning the human body also excludes veterinary science, which is concerned only with the bodies of animals. As for the restriction which states that the art of medicine bestows health, this excludes the non-medical arts of the beautician, such as hairdressing and makeup, from the definition. For, while the beautician is concerned with the human body, he does not, of course, confer the benefit of health. What is meant by the benefit of health is that if it is present, the Medicine preserves it, while if it has become separated from the body, he restores it.

The author then gives another definition of medicine: "Medicine is that science which enquires into matters of health and illness as well as matters which concern neither sickness nor health." What is meant by matters of health is sound bodies, the means by which that soundness is restored and preserved whenever the body becomes ill, and the signs which indicate that the body is sound. What is meant by matters of illness is ailing bodies, the causes of illnesses and that which causes them to linger on, and the signs which indicate that the body is ailing. As for the matters which concern neither health nor sickness, this refers to the causes and signs of a state which can be defined neither as health nor illness. Bodies in this state are either those not in complete health, such as the bodies of aged or convalescent persons; those a part of which has been overtaken by illness while the rest remains sound, such as the case of a man whose hand is paralyzed while the rest of his body is in ordinary health; or those bodies whose health can not be relied on-that is which are sometimes healthy and sometimes ill, and whose health is not constant.

Now, when a person is familiar with the general rules pertaining to these matters, he can then proceed to the treatment and cure of various bodies. He will become aware of health or illness through the appropriate sign. He will secure the means to restore health if it has disappeared, and the means to preserve it if it is present, and will root out the causes which have brought about an illness. Such a person is a real physician, and what we have set out here (Ibn Hindū declares) is the correct definition of the science of medicine.

SUMMARY OF THE FOURTH CHAPTER, ON THE NOBILITY OF THE SCIENCE OF MEDICINE.

Ibn Hindū first defines the virtue and superiority of each science according to the rank and excellence of its aim and subject-matter. Concerning medicine, he states that its subject-matter is the bodies of humans. It is established in philosophy that man is the most noble of beings. Man, in turn, is composed of two parts: the soul and the body. Therefore his soul is the most noble of souls and his body the most noble of bodies. It is not only the body which is noble as the subject of medicine, but the goal of medicine, which is the granting of health to the body, is noble also.

The author then reproduces an argument from The Encouragement of the Learning of the Practical Arts (*al-Haththʿalā al-sināʿat*) of Galen. This can be summarized as follows:

Nothing which is desired by man and grants him pleasure is equal to health. The acquisition and preservation of health is sought by every person, and man's efforts in regulating his life and gaining his livelihood are undertaken for this very reason. Thus the art of medicine which preserves health is the highest of all arts. He who denied this fact rebels against God and violates His order of things. For we see that in every inhabited place medicine has cured many ill persons.

Ibn Hindū states further that this nobility inheres in the very essence of the science of medicine. Even if we subtract the nobility incidental to medicine such as wealth, fame, and position, and also the benefits to be gained in the next world, that is the attainment of a station close to God and the gaining of His reward, medicine will still hold the highest rank.

The author concludes by complaining of the physicians of his own time who content themselves with mere titles and ceremonies, and lower themselves to the extent that they are content to be put in the same class as beauticians, cuppers, and drawers of blood. This is especially true when they are summoned by the Sultan. If they should just once ride upon two noble horses in order to enter into the royal presence, they feel that they have reached the highest rank possible. "My

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teacher Abū al-Khayr al-Khammar," he writes, "was correct when he said: This profession used to be honoured by kings and singled out by the Godly-but now it has fallen into the hands of rabble who have stooped for the sake of their own worldly gain to the level of servants and slaves of their wealthy patients." "What resemblance (Ibn Hindū asks) do such people have to Hippocrates, who spent all his effort in the enobling of medicine and the complete fulfillment of his duty as a physician! It was Hippocrates who, when the Shah of Persia asked him to leave Greece and come to Persia, sending him a hundred thousand *dīnārs* and promising to send him the same amount again, refused and said," "I do not sell virtue for money"

SUMMARY OF THE FIFTH CHAPTER, ON THE VARIOUS DIVISIONS OF THE SCIENCE OF MEDICINE.

This chapter begins with a preface which explains that, since the purpose of medicine is to gain health, the physician must be aware of the medical practices which are actually based on the science of medicine. Such practices can be carried out only if the physician knows what the human body is composed of and what constitutes either its health or illness. They can be carried out only if he knows the causes of health and sickness, and the signs which indicate them. From the point of view of this kind of enquiry medicine may be divided into two parts: speculative, and practical.

Speculative medicine in turn is divided into three parts. The first is the knowledge of natural (*tabī'ī*) matters, that is those which exist naturally in the human body, by which the body is compounded and through which it subsists. The second is knowledge of the causes, and the third, finally, is knowledge of the indications (*dalāil*) and signs (*alāmāt*).

The natural matters consist of the elements (*ustuqussat* [from the Greek], the constitution (*mizāj*), the four humours (*akhlāt*), the organs (*a'dā*), and the faculties (*quwa*) and actions which issue from them.

All these things are connected with one another. Thus the posterior cannot be known unless the preliminary is first known. Health is connected with the actions which issue from man's faculties and powers, including both psychological actions such as thought, memory and imagination, and bodily actions such as eating and digestion. Thus a knowledge of man's faculties and powers is necessary for the knowledge of these actions. Since these faculties result, in turn, from the constitution, a knowledge of the constitution is also necessary. Temperament results from certain things which are mixed together in the human body. There are the four elements, that is fire, air, water, and earth. Just as the first principle of the human body is these four elements, so the second is the humours which results from the four elements. These humours are: phlegm (*balgham*, [probably also from the Greek]), which is like water; blood, which is like air; yellow bile, which is like fire; and black bile, which is like earth. Finally the body is composed of its constituent parts, which are the organs.

The physician must therefore have a knowledge of all these things. That he must be expert in the second and third parts of speculative medicine, that is the causes and signs, has already been discussed in chapter three on the definition of the science of medicine.

Practical medicine may also be divided into two parts. The first is the preservation of health, and the second its restoration.

The preservation of health is divided again by Ibn Hindū into three parts. The first is the preservation of the health which is already present. This is called the absolute preservation of health. The second is the prevention of the causes of illness; this is called prior preservation [preventative medicine]. The third is the treatment and cure of bodies whose health is not complete, such as the treatment of elderly persons [geriatrics], of children [paediatrics], and of convalescents [convalescent medicine].

The restoration of health is divided into two parts. The first is treatment through food, exercise, and so on. The second is treatment through cupping (*batt*), amputation, cauterization, and setting of fractures.

SUMMARY OF THE SIXTH CHAPTER, ON THE VARIOUS SECTS WITHIN THE SCIENCE OF MEDICINE.

Each of the various medical sects (*firaq*) has its own particular view and method in recognizing illness and treating it. Ibn Hindū states that the physicians agree that the goal of medicine is to confer the benefit of health, that is to give health to sick persons. On the method of obtaining the things which are useful to health, however, they differ. Some say that such things are obtained through experience. These are called empiricists. Others believe that experience alone is not enough, but that it must rather be combined with analogy, these are called the dogmatists. There is also a third group, called the methodists (*ashab-al-hiyal*), because they imagine that they have through clever strategem made the science of medicine more summary, purifying it of the superficialities and accretions with which the empiricists and dogmatists preoccupy themselves.

Ibn Hindū goes on to describe and characterize each of these sects. The empiricists (he writes) say that medicine is derived from experience, experience being the knowledge which is obtained through the senses.

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They also say that the principles and rules of medicine result from four things: incident (*ittifaqî*), intention (*irādî*), comparison (*tashbîh*), and the use of something in one case that was used in another, similar case (*naql min shay ilā shabîhi-hi*). Incident is in turn divided into two parts: natural incident, such as a nosebleed, a sweat, vomiting, or other similar things which occur naturally and which confer either benefit or harm; and accidental incident, which occurs in a human being neither naturally nor through his intention, and which similarly results in either some benefit or some harm. An example of an accidental incident is when a sick person falls and blood flows out of him. Intention means when something is experienced by choice; the motive for such an experiment may be somthing seen in a dream, or other similar things.

Comparison is when the physician employs one of the three instances mentioned above [that is intention, natural incident, or accidental incident] when a new case presents itself. For example, when he sees that his patient who has a bloody fever obtains relief through a flow of blood from his nose, whether that occurs naturally, accidentally, or through the will of some person, then he will try drawing blood in like illnesses.

Finally, *naql* is the method employed when the physician encounters an illness which he has not seen before, or which he has seen but for which there is no proven treatment. In this case he will resort to *naql*, that is he will use a medicine which has been proven in the case of one illness in a similar illness, or will use a medicine proven in the case of one organ of the body for another similar organ-or if he does not have access to the proper medicine, he will use a similar one.

The dogmatists hold that there is no doubt that sense and experience are the root and principle of all sciences and arts- but that these must be subject to the instruments of thought. They say that the rules of medicine and of other arts must be derived through thought and analogy, that is the determination of unknown things through things which are known. It is through the use of thought and analogy that the various natures- the constitutions - may be known, and through which the faculties which are the cause of changes in the body may also be known.

Causes of changes in the body are of two types. One is that which necessarily results in alteration: such as climate, movement and rest, food and drink, sleep and wakefulness, and constipation and looseness -as well as mental occurrences such as sorrow or happiness, anger etc. The second type of cause is that which results in change in the body without that change being necessary: such as the change which appears as the result of the blow of a sword, the attack of a wild animal, or burns to the body.

It is also necessary to know the type of illness which the physician intends to treat, for if it is not known then it will not be possible to take it away from the body. Finally, one must know the extent of the illness in order for the type of treatment to be determined. The extent will vary in accordance with the following factors: the bodily strength of the patient, age, temperament, the season in which the illness appears, the weather on the day it appears, the type of city the patient lives in, and his habits and profession.

Thus when a patient comes to an empiricist he refers to his previous experience of persons who have had the same type of illness to the same degree, and who are of similar age and temperament. Then he prescribes the same medicine which proved effective in the past. The dogmatist, however, will on the basis of the same evidence (that is age, temperament , habits, and residence) envisage a general rule with regard to each type of sickness, and when he is presented with a new case will refer to that rule.

As for the methodists, they examine neither the cause of illnesses, nor the habits and age of the patient, nor the times of the year, temperament and residence, bodily strength or the organs of the body. They do not pay attention to each separate and particular case in itself, for (they say) such cases are unlimited. Their attention is directed instead to knowledge of the most general aspects, which consist according to them either of constipation and looseness, or a combination of the two. By consrication they mean the trapping of waste which should normally be eliminated from the body, such as the retention of urine and other such things. By looseness they mean an excess in the elimination of these same wastes, such as constant urination and the like. By a combination of the two, finally, they mean a sickness which combines both conditions, such as an eye which is swollen but which is at the same time constantly tearing.

The methodists state that the treatment of these three general illnesses is accomplished either through the management of food and drink, through rest and movement, or through sleep and wakefulness.

Ibn Hindū finally declares that the dogmatists are correct, and goes on to demonstrate the invalidity of both the empiricist and methodist schools. He concludes that it is the dogmatists who hold out the possibility of progress in methods of diagnosis and treatment. The empircists, because they do not believe in analogy, are extremely limited in this area. As for the methodists, who do not deal at all with particularities but pay attention only to certain general aspects, they are subject to many errors.

SUMMARY OF THE SEVENTH CHAPTER, ON THE METHODS THROUGH WHICH THE OF MEDICINE MAY BE GRASPED.

Ibn Hindū believes that medicine is grasped through

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reason (*aql*). This is accomplished in the following way. The intellect first masters the principles on the basis of certain matters: *first*, those matters which have occurred incidentally; *second*, those matters which have been examined purposely; *thirdly*, those things which have been used because they were seen in dreams; and *fourthly*, things which have been observed as being part of the divinely-implanted instinct (*ilhām*) in animals. The principles thus deduced are subsequently strengthened through the use of thought and the application of analogy. [That is the thought process is first set in motion by observation and experience, following which analogy is brought into force, and then the principles observed are finally confirmed and refined.]

An example of those things which occur incidentally is found in the story that Galen tells of a group of people who were condemned to death for a certain crime. The king commanded that the condemned men should be thrown into a pit of vipers. The poison, however, had no effect on them. When the matter was investigated, it became apparent that they had eaten a certain kind of orange. It was thus discovered for the first time that the orange was resistant to poison.

An example of a matter which has been examined purposely are foods and medicines which have each been repeatedly tested on bodies with different natures so that a particular effect may be decisively attributed to them.

As for things used because they have been seen in dreams, it is a fact that many ill persons have dreamed that someone says to them use such-and-such a drug; and then they take the drug when they awake and are cured.

An example of matters which have been understood through the divinely-inspired instinct of animals is the instance of the long-beaked bird which was observed suffering from colic. It went to the seashore, filled its beak with salt water and emptied it into its anus-and thus rid itself of its affliction.

If man employs the methods described above carefully and intelligently (ibn Hindū concludes), he will find that what results is truly the art of medicine, especially as many lifetimes and ages go by, as different nations practice medicine, and as experience and analogy are constantly applied. It is for this reason that we see that many Indian and Persian types of treatments have entered into Greek medicine, while Greek treatments have also become mixed with Persian ones. It is well known that when Alexander conquered Persia he burned their religious books, but had their scientific works taken back to Greece and translated for the benefit of the physicians.

SUMMARY OF THE EIGHTH CHAPTER, CONCERNING THE SCIENCES WHICH THE PHYSICIAN MUST KNOWN IN ORDER TO BE PERFECT IN HIS ART AND PROFESSION

Ibn Hindū first emphasizes the importance which Galen gave to medicine. He takes Galen's work entitled that the Excellent Physician must also be a Philosopher (*Fī anna al-tabīb al-fādil yajibu an yakūn faylasūf (an)* as an indication of the respect and veneration due to medicine. He recalls that it was while discussing this work with his teacher Abū al-Khayr al-Khammār that he concluded that it is more fitting for a philosopher to be a physician than a physician to be a philosopher. This is because the physician gives health to the human body, while the philosopher examines the truths of the existents and accomplishes the good. It is, according to Plato, the philosopher who is able to engage as far as humanly possible in the *imitatio* of God. To put it another way, philosophy is a general class which includes both medicine and other things; it is for this reason that it is called the art of arts. Thus the philosopher will of necessity enquire into both types of medicine: speculative, and practical. Speculative medicine is a subject for philosophy because it enquires into the truths of the existents, while practical medicine is also a subject for philosophy because it enquires into all goods.

Ibn Hindū next lays down the division of philosophy into speculative and practical. Having enumerated the further subdivisions of each of these branches, he then explains the need the physician has of the various other sciences as follows.

The physician, he says, has no need of the natural science in his capacity as a physician. It is not necessary for him to master everything relating to the natures of the heavens, the stars, and the four elements. He need only be concerned with that which is relevant to the health or sickness of the body. This includes the elements, **temperaments**, the four humours, the organs, the faculties and actions resulting from the faculties, and the indications of sickness and health.

As for mathematics, the physician should know some part of astronomy, as Hippocrates said: "Astronomy is of more than a little use in the art of medicine". This is certainly true, for the crises and the days on which they occur have a connection with this science; the crises of acute illnesses are connected with the moon, while those involved in chronic illnesses are connected with the sun. In the same way, knowledge of the change and differences between various **seasons**, the effect of different kinds of climate on the temperament,

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and the situation of different cities in relation to the heavens depends on a thorough knowledge of astronomy. Since a certain amount of geometry is needed to learn astronomy, the physician must also have that requisite knowledge. Arithmetic, however, is not very necessary.

This concludes Ibn Hindū's discussion of the knowledge of speculative philosophy necessary for the physician. As for the practical aspects, there is no doubt that the physician does not need to know political science. He should, however, know something of ethics, for the ancients have said that it is necessary that he have a pure spirit and be unpolluted by corrupt morals so that the truths of the art of medicine may find a place in his heart. Purity of the soul and spirit results only through the science of ethics.

The physician's requirements of each of the two aspects of philosophy having been understood, it should be emphasized that the thing most necessary for the physician is, according to Ibn Hindu, logic, that is the science of analogy and proof. For (as has been explained) the true physician is the one who employs analogy, and neither the speculative nor practical aspects of medicine are truly actualized except through the use of logic. This is because logic is the science which distinguishes true from false in statements, valid from invalid in ideas, and that which is correct from error in actions.

SUMMARY OF THE NINTH CHAPTER, ON THE METHOD BY WHICH THE STUDENT OF MEDICINE MAY MAKE STEADY PROGRESS IN HIS STUDIES, AND THE PROPER ORDER OF MEDICAL BOOKS TO BE STUDIED

Ibn Hindū states that there are three methods usually employed in the study and teaching of medical subjects.

The first is to read in those subjects and matters which are naturally prior. According to this method one should study the following subjects in this particular order: the elements, the temperaments, the humours, and the organs.

The second method is to first study those subjects which are the most noble, for instance to begin with anatomy and then to proceed to knowledge of the humours and the elements, on the principle that the human body is the most noble of these. In the same way, the vital organs are more noble than the other organs.

The third method is the pedagogical arrangement of study. This means that those things which are easier and closer to the understanding of the student are studied first. This was the way the works of Galen were usually studied in the school of Alexandria.

Ibn Hindū concludes with a list of books which students of the Alexandrian school of medicine studied, according to his teacher Abū al-Khayr al-Khammār:

(1) *Kitāb al-Firaq* (The book of Sects). This concerns the various sects of medicine. Galen discusses the points on which the three sects of medicine agree and disagree, and which sect is to be relied upon.

(2) *al-Sanā'ah al-Saghîrah* (The Lesser Art). This is a summary by Galen of the science of medicine, intended as an *aide-mémoire* for the professor and a source of encouragement for the student. It is, in fact, a preface to the science of medicine.

(3) *Kitāb al-Nabd* (Book of the Pulse), this is addressed to Tirones. It is sometimes called The Lesser Book of the Pulsé to distinguish it from the Greater Book of the Pulsé by Galen.

(4) *Kitāb Jālînūs* (The Book of Galen), addressed to Glarcan. This book is divided by Galen into two chapters, the first concerning Fevers and the second concerning unnatural swellings.

(5) *Kitāb al-Ustugusāt 'alā Rāy Buqrāt* (The Book of the Elements According to Hippocrates). In this book Galen attempts to demonstrate that all corporeal matter present in the world of generaton and corruption, including the human body, is compounded of the four elements, that is fire, air, water, and earth.

(6) *Kitāb al-Mizāj* (The Book of the Temperament), consisting of three chapters.

(7) *Kitāb al-Quwā al-Tabî'îyah* (the Book of the Natural Faculties), also consisting of three chapters.

(8) *Kitāb al-Tashrîh* (The Book of Anatomy). The five chapters which make up this work are arranged as follows: anatomy of the bones; anatomy of the muscles; anatomy of the nerves; anatomy of the veins; and anatomy of the arteries.

(9) *Kitāb al-Ilal wa-al-A'rād* (The Book of illnesses and Symptoms). This consists of six chapters. The first is on the types of illnesses, the second on their causes, the third on the types of symptoms, and the other three on the causes of the symptoms.

(10) *al-Kitāb al-Kabîr fî al-Nabd* (The Greater Book of the Pulsé). This contains four chapters. The first is on the types of pulse, the second on diagnosis through the pulse, the third on the causes of the pulse, and the fourth on the warning signs which can be detected through it.

(11) *Kitāb al-Mawādi' al-Alimah* (The Book of Painful Areas), in six chapters.

(12) *Kitāb al-Buhrāh* (The Book Concerning the Crisis), in three chapters.

(13) *Kitāb Ayyam al-Buhrān* (Book of the Days of Crisis), in three chapters.

(14) *Kitāb al-Hummayāt* (The Book of Fevers), in

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three chapters.

(15) *Kitāb Hīlat al-Bur* (The Method for Recovery), in fourteen chapters.

(16) *Kitāb Tabīr al-Sihhāh* (The Treatment of Health), in six chapters.

The Alexandrians have a compendium of these sixteen books, and they imagined that by studying this compendium the student will no longer need to read Galeń's original texts.

Ibn Hindū concludes the chapter by emphasizing once again that, before beginning to learn medicine, the student must have a sure and comprehensive kowledge of logic, logic being the tool by which medicine itself is learned. It is through logic, he writes, that truth may be distinguished from error. Following this the student must master a part of the science of ethics in order to cleanse his soul of the vices and prepare it for the virtues. Then he should learn something of geometry and astronomy, to the extent which has been outlined above. In fact, even that small amount of geometry which he must learn must again be preceded by a knowledge of logic. The ancients have rightly said that: "Geometry opens the eye of the intelligence, and one eye of the intelligence is better than a thousandeyes of the body". The following maxim was inscribed overthe entrance to Plato's academy: "He who does not know geometry well may not enter our assembly".

SUMMARY OF THE TENTH CHAPTER, ON MEDICAL EXPRESSION AND DEFINITIONS OF MEDICAL TERMS.

Ibn Hindū states that those who coined words were not well aware of all the meanings and cocepts in order to designate them with names and words before an enquiry into the various sciences and arts. There was thus no awareness of many of the concepts connected with them, and those who first set about extracting such knowledge had to invent terms for the concepts they were dealing with. One must therefore be familiar with these invented terms and conventional expressions in order to gain access to the knowledge to which they pertain. Ibn Hindū gives a list of medical terms and definitions under the following twelve headings. (1) Logical terms; (2) Philosophical terms; (3) Terms Particular to the origins of medicine; (4) Anatomy; (5) Sickness; (6) The pulse; (7) Things which protrude from the body; (8) The rules concerning medicines and foods; (9) Simple and compound medicines; (10) Names of foods; (11) Rare names of illnesses, weights and measures, and other things; (12) Fine points and rarely-encountered matters not covered under the previous headings.

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