A Mediaeval Compendium of Arabic Medicine:
Abū Sahl al-Masīḥī's "Book of the Hundred"**

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**Introduction**

The *kunnāsh* (or compendium) type of book was very popular among Arabic physicians of the mediaeval period and became the commonest form of medical book to be written. It was supposed to be a comprehensive system of medicine in condensed form, so as to acquit the reader with all the essentials of medicine without overloading him with too much detail. Many *kunnāsh* declared this to be their explicit aim in their introductory remarks. As time went on, the *kunnāsh* became the preferred type of medical work, to the despair of such educational purists as Ibn Rijwān who strongly deprecated the substitution of these derivative works for the original works of the ancients.

These books were not identical either in arrangement or in content, but they resembled each other in certain important respects: they all included at some point a section on diseases arranged from head to toe; many also included sections on medical theory, that is: the nature of humours, temperaments, crisis, coction, and so on. Diseases were described in a stereotyped way: cause, symptoms and signs, and therapy. The therapy section was usually the biggest part and often included a number of prescriptions. They also included a section on external or skin diseases, and a section on fevers. Many of them, but not all, also added a usually brief chapter on fractures and dislocations. Many of them also had a section on simple and compound drugs, and on poisons of animal origin or otherwise, and many books included a section on the preservation of health.

*Kunnāsh* were used for practical purposes as manuals for medical practitioners and also for the teaching of practitioners and medical students. The relative emphasis on these two functions varied from one *kunnāsh* to another. For example, some *kunnāsh* were no more than pure manuals of medicine, written in a simple, condensed style with a great deal of detail on therapeutics and very little on medical theory; this type was obviously of use to the practitioner. At the other end of the spectrum, was the type of *kunnāsh* which laid specific emphasis on medical theory, perhaps at the expense of detail on practical procedures, and which favoured a more complicated, intellectual approach; such *kunnāsh* were useful for teaching purposes and could also be read by the intelligent and educated layman. Abū Sahl al-Masīḥī's *kunnāsh* entitled *Kitāb al-miʿā fīl-ṭibb* ("The Book of the Hundred on Medicine") is an example of the latter sort.

The study which follows is based entirely on manuscript material, for this worthy and elegant book has never been edited in whole or in part. The 13th-century writer, Nuʾmān b. ʿAlī al-Riḍā al-Isrāʾīlī, composed a synopsis of it which was edited by Sharafi in 1959. Despite its prestige and popularity (see below), it was never translated either into Latin or into a modern language. Neither, for that matter, were any other of al-Masīḥī's books.

Abū Sahl al-Masīḥī's Biography

Abū Sahl ʿIṣā b. Yahya al-Masīḥī al-Jurjānī was, as is revealed by his name, a Christian and a man of Jurjān in Persia. Al-Qiftī says that he was learned in the sciences of the ancients, and famous among his countrymen.

4. This is made clear in the introductions of many of these books, wherein it is stated that both practitioner and student will benefit from the book: a typical example is Ibn al-Jazār's introduction to his book, *Ẓād al-musāffī wa qīl al-ṣafīr.*

5. Such a book is Ibn Buṭlān's *Kunnāsh al-rabīḥī waʾl-adīrāwī*, which is a simple manual of diseases and their treatments.

He describes him as a “practitioner” (al-mutatabbīb) and a logician (almunāqi), presumably implying by the latter description that he was interested in or had written works on logic. He wrote a famous kunna‘ called al-Mī`at maqāla (more usually known as Kitāb al-mi‘a fil-tībb). He died “in middle age” at the age of 40. Ibn Abī Usaybi‘a is able to give more information about him: he praises his skill as a physician and his great learning and stresses his fluency and excellence in the Arabic language, which he wrote with a beautiful hand. Ibn Abī Usaybi‘a says that he examined a copy of al-Mašīḥ’s book, Fī Iḥṣār ilāma Allāh ta‘āla fī tāḥlīl al-insān (“On the Revelation of God's Wisdom in Creating Man”), written in his own handwriting, and was impressed by its excellence of grammar and linguistic precision. He goes on to report what Shaykh Muhadhdbah al-Dīn Abī Abī al-Raḥīm b. Abī al-Aswād b. Abī Ḥaṣūb said of al-Mašīḥ: he had never known any Christian physician, either ancient or modern, who could express himself as well as al-Mašīḥ. (All this implies that al-Mašīḥ’s first language was not Arabic, and since he was a Christian, his mother tongue might well have been Syriac; it also implies that Christians in general did not know Arabic well.) Then, Ibn Abī Usaybi‘a says that al-Mašīḥ is said to have been the teacher of Ibn Sinā in medicine, and that the latter became proficient in this and in philosophy at his hands, such that he dedicated several books to him.

It is not by any means certain that al-Mašīḥ was indeed Ibn Sinā’s teacher. Ibn Sinā himself asserts in his autobiography that he had no teachers in medicine, not that that necessarily rules it out completely. But al-Qīfī makes no mention of this claim either. The two men are, however, connected in the Persian 12th-century work, the Chaḥār Maqāla, where the story is recounted that when both of them took flight from the court of the ruler of Khwārizm Abū ‘l-Abbās Ma’mūn (1007-1017), they were overtaken by a sandstorm in which al-Mašīḥ died. The Chaḥār Maqāla extols the virtues of al-Mašīḥ and calls him the successor in philosophy to Aristotle. His book, Kitāb al-Mī‘a, is recommended as part of the syllabus for medical students.

Ibn Abī Usaybi‘a provides a list of al-Mašīḥ’s books. He begins with K. al-Mī‘a fil-tībb, considered to be the best and most famous of his books. There are three other titles of books on medicine, philosophy, and one book, Fī l-Waḥda‘ which he dedicated to the ruler of Khwārizm, Ma’mūn.

17. C. Brockelmann, Geschichte der arabischen Literatur, (henceforth: GAL; and Supplement, (henceforth: S), (Leiden, Brill, 393-42), I, 536; SI, 423.
20. IAU, II, 19, 110-11, lists this among Ibn Sinā’s works: “A missive to Abū Sahl al-Mašīḥi on the angle, which he wrote in Jurjān”. It may be calculated from Ibn Sinā’s autobiography, (The Life of Ibn Sinā, ed. and transl. by W.E. Gohm, (State University of New York Press, 1974), that he was in Jurjān in 1002.
well written, and provided a wide selection of treatments.\textsuperscript{21} It was recommended for use by students in the medical teaching syllabus of the Chahâr Maqâla, as was noted above. Modern commentators have also been impressed with this book; both Leclerc and Sarton believed it to have been a model for Ibn Sînâ's Canon.\textsuperscript{22} The book survives in at least 29 manuscript copies. The earliest of these is said to be dated 400/1010, which, if true, means that it must have been made either during the author's lifetime or shortly after his death.\textsuperscript{23} There are six other early manuscripts, that is, dating from before 1300 A.D.\textsuperscript{24} In the centuries that follow, there are manuscripts dating from each century, and a high concentration of very late manuscripts: five are said to be dated between 1233/1818 and 1300/1883.\textsuperscript{25} Thus, manuscripts survive from every century beginning virtually from the date of death of the author until the end of the last century. This, and the large number of surviving manuscripts is impressive evidence of the popularity and importance of the book.

In the account that follows, only the briefest summary of the book's contents has been given, for it is such a large and comprehensive work that it could (and should) form the subject of a much longer study.

Contents of K. al-Mi'\'a

K. al-Mi'\'a is a large work: the British Library manuscript, on which this study is based, contains 376 folios of small script.\textsuperscript{26} It is divided into a hundred chapters or "books," (hence the title), and, as the author says in his introduction, each is meant to be a complete work of its own, not dependent on the others for its understanding. The introduction is long and contains an analysis of the problems which beset the writing of medical books:\textsuperscript{27} they are not properly organised, so that the divisions of the art are not known; there is either too much detail or too little; theory receives too little attention, while practical methods and therapy receive too much. For these reasons, the author has decided to write a book which will remedy all these failings in as synoptic a way as possible.

The result is an encyclopedia of medicine in which everything is systematised as far as possible. It is organised on a basis of the standard divisions of medicine, (best expressed in Chunay b. Ishâq's pithy introduction to medicine, al-Masa'il fil'îbâb).\textsuperscript{28} The descriptions are lucid, well-ordered, and there is indeed an attempt to make each book complete in itself. There is a strong emphasis on theoretical aspects, and indeed the major part of the book is devoted to theoretical principles and discussion. It is only when the 60th book is reached on f. 267b, that is, after two-thirds of the book have been gone through, that practical methods are included in any detail.

The index of "books" is set out soon after the introduction. Each section is named "the book of such-and-such." The subjects dealt with in these books have been listed on the following page. They do not correspond to the actual titles in K. al-Mi'\'a, where the same subject sometimes has several books devoted to it, but are meant here to convey a general idea to the reader of the contents of the kunnaš. In this way, it may be seen that all the standard topics in medicine which are current at the time are covered; all essential aspects of the humoral theory, the naturals: which are the organs, the elements, the temperaments, the faculties, the actions, and the spirits; the non-naturals,\textsuperscript{29} which are six and which may be picked out among the list of subjects early on in the kunnaš as air, food and drink, sleep and waking, movement and rest, evacuations (detailed into purification, emesis, venesection, and the like), and the passions of the soul (the signs of psychical origin); and the contra-naturals, meaning the cause and process of disease. There is a section on "pathology," that is, coction, crisis, the pulse, and the urine; a section on prognosis; and a section on the preservation of health. All these were standard subjects of importance which were included as a matter of routine in most kunnašât. Likewise, there is the inevitable classification of diseases from head to toe,\textsuperscript{30} and the other two classical subjects: fevers

\textsuperscript{21} This information is supplied by IAU, I, 328. Amin al-Dawla b. al-Tilmid is a distinguished physician of the 12th century, (d.1165), who was chief physician at the 'Aṣâdi hospital in Baghdad. (For his biography, see IAU, I, 259-76).

\textsuperscript{22} Leclerc, op. cit., I, 356-7; Sarton, op. cit., I, 678.

\textsuperscript{23} This MS, Istanbul, Nurusemaniye 3557, is described by Dietrich, (A. Dietrich, Medicina Arabica, Göttingen, Vandenhoeck and Ruprecht, 1966, p. 70). The dating is only presumptive.

\textsuperscript{24} The manuscript citations for these are to be found in GAL, I, 258; SI, 423; and Sezgin, op. cit., III, 326-7.

\textsuperscript{25} The most recent is MS. Tehran, Daneshkada-i Fiziki, 247/1.

\textsuperscript{26} This is MS. Or. 6489. It is dated (on f. 194a) as 1105 A. H. (1694 A. D.) and is written in clear, good naskh. It is well preserved but part of the introduction is obliterated and some of the folios of chapter 99 on fractures and dislocations are missing. (See also S. Hamarneh, Catalogue of the Arabic Manuscripts on Medicine and Pharmacy at the British Library, Cairo, "Les Editions Universitaires d'Egypt", 1975, pp. 88-90).

\textsuperscript{27} This was a common format for introductions to compendia of medicine. There was always some fault with the others which the author had decided to rectify in his book. A lengthy critique of other kunnašât, both Greek and Arabic, is to be found in the introduction to al-Majâri's Kâmîl.

\textsuperscript{28} This work, alternatively known as the Isagoge, was celebrated throughout the Middle Ages. It is set out in a question-and-answer form and summarises the medical theory of the time using a rigid classification of subject matter which became standard for all medical books thereafter. (This important work is still unedited and exists only in manuscript form.)

\textsuperscript{29} There are several studies on the non-naturals. For example, P. H. Nebihl, "The non-naturals", Bull. Hist. Med., 45 (1971), 486-92; and L. J. RJhames, "The six things non-natural, a note on the origins and fate of a doctrine and a phrase", Chlo Medica, 3 (1968), 337-47.

\textsuperscript{30} This was a classification that was universally employed in Arabic medical textbooks and in the Greek medical books of late antiquity.
The first book is a highly theoretical and philosophical introduction to medicine. The second book presents a lengthy account of the theory of elements and how they enter into the formation of the human body:

(f. 6b, 1.17 – f. 7a, 1.12)

The elements in nature are four: fire, air, water, and earth. They were named elements because they are not constructed or formed from any other bodies...and the (human) body is made up of organs of like parts. Every one of these (organs) exists either in the semen first or in the blood after that. And the semen is formed from blood, and blood (is formed) from food, and food is either animal or plant. The state of an animal's body is like that of man, so, therefore, all of them come from plants; and plants are formed from earth and water. Therefore, the body of man is made up of the primary elements".

He goes on to define the qualities of the four elements as hot, dry, wet, etc. His style is clear, didactic, and detailed. The other sections on medical theory are likewise lucid. The book on the humours, for example, could not have left any student of the art in much doubt as to the nature of the humours in health and disease:

(f. 28a, 1.1 – 1.11)

"The humours are four: blood, the yellow humour, the black humour, and phlegm. They are all to be found in the body by reason of food, meaning that some of them are food, and that is blood, and some are superfluities of food; these are the three remaining humours, for phlegm is a superfluity which comes before blood because the food has not been digested and has not reached coction yet, so that it stays unripe. The yellow humour and the
black humour go beyond the nature of blood, because they have reached the limits of combustion. The presence of all these in the body is normal, meaning that blood is the true nutrition that is intended and phlegm is a humour which could be digested so that the body could be nourished by it”.

And still on the subject of humours, al-Masili explains how it is that they cause disease:

(f. 30b, 1.12 – 1.15)

وهذة هي الاعلاع التي تسمى اركان البدن وما إذا زادت على هذا المقدار، أو الكمية فتخرج عن الطبع بسبب معرفي وجب أن تعلم إن كانت مفرطة الكيفيات وتسيرت إن كانت كهيرة المقدار.

“These are the humours which are called the fundamental components of the body. But if they increase over their (normal) amount or their qualities, they become contra-natural due to a pathological cause. It is (then) necessary to bring (the body) back to a state of moderation if (the humours) are in excess in their qualities, and to evacuate it if they are excessive in amount.”

In this brief extract, he enunciates the principles of disease causation and therapy which were the essence of the humoral theory followed by himself, his contemporaries, and the Greek physicians before him. As to the other aspects of the humoral theory, the faculties are explained in a systematic manner:

(f. 36a, 1.14 – 1.22)

قالالبدن أربع قوى إحداهما نفسانية وهي التي تعمل الاحساس والميزة والتحرك بالاختيار والثانيّة حيوانية وهي تعني جميع البدن الحية والحركة CAREFULNESS AND ACCURACY من طبقات مختلفة، وهي التي تعني جميع البدن المادّية وتخفض قوتهم وتبديلهما لزائدة من طبقات مختلفة، وهي التي تعني جميع البدن الطبيعية.

“The body has four faculties, the first is psychic and it is (the faculty) which effects sensation, discrimination, and voluntary motion. The second is animal and it is the one which gives life and the innate heat to the whole of the body. The third is natural, and it is the one which gives the whole of the body nutrition and which expels its superfluities. The fourth is generative, and it is the one which prepares for fertilisation and which completes the growth of the foetus. In medicine, the generative faculty is counted with the nutritive faculty, and the two together are called the natural (faculty)”.

This extract displays the general style of the book quite well. It also reveals the neat systematisation typical of Arabic writers. This economy of description of the faculties should be compared with the proximity and disorganisation of Galen’s work on the same theme, On the Natural Faculties. The other books on the temperatures, the actions, and the spirits are just as well-ordered and provide a thorough review of the principles of medical theory in readily assimilable form.

The two books on the like and unlike organs constitute the anatomy section of the work. These terms refer to the classification of the parts of the body into those whose constituents are homogenous, such as fat, bone, cartilage, and so on, and those which are made up of different tissues, such as arms, legs, hands, and so on. This division was common to Arabic anatomy, and derived from an Aristotelian classification of the organs of the body into homeoerous and ‘ahomeoerous’ types. The unlike organs are classified from top to bottom, in the same way as diseases, and in fact represent the internal organs. The anatomical descriptions are exact, as for instance this extract on the heart:

(f. 21b, 1.6 – 1.12)

والتقلب صغير الشكل قاعدته في جهته ورأسه المخروط في جهته وأسفل القلب ووضعه في وسط الصدر ومن جمهه ورأسه المخروط مائم إنا نامه الساق وقلب غالب من غشاكي مخيط تتسع منه إلا عند القلب، ففيه جزئ يعده في أذن الساق ونافقة الأذن في أذن الساق.

“The heart is cone-shaped, its base being towards the top of the body, and its pointed end towards the lower part of the body. The base of the heart is in the middle of the chest (equally) on all its sides, (but) its pointed head is inclined towards the left side.

“The heart has an envelope made of a thick membrane, which surrounds it but is distinct from it (i.e. not adherent) except at its base. It has two cavities, one on the right side and one on the left. There is more blood than spirit in the right cavity, and more spirit than blood in the left. There are small apertures from the right to the left (cavity)”.

This description is interesting in more ways than one. It is modelled on Galenic anatomy, like other Arabic books of the time, (for example, the section on the anatomy of the heart in al-Razi’s famous kunna, K. 31. Translated by A. J. Broek, Loeb Classical Library (London, Heinemann), 1928.
al-Manṣūri, is almost identical),\textsuperscript{33} to the extent of repeating Galen’s erroneous assertion that there were communications between the right and left ventricles. It was this assertion which was countered by Ibn al-Nafis two hundred years later, and which earned him the enthusiastic description of “the discoverer of the pulmonary circulation” by certain modern writers.\textsuperscript{34} The next book is also Galenic in concept, for it contains a teleological account of the function of organs on the lines of the large work of Galen, \textit{On the Usefulness of the Parts of the Body}.\textsuperscript{35} There is much useful information in this book on the physiology of the time, and a remarkably clear exposition of the role of the vital heat and the elaboration of the animal spirit.

The books that follow may be said to be about the environment: on airs and winds, on dwellings, and on waters. Books 12 to 18 inclusive are on dietetics: the principles governing the choice of food and drink which are connected with a study of the temperament, the season, and the preponderant humours; the faculties and qualities of simple foods; and the benefits and properties of wine and other drinks. Book 16 deals with the healthful preparation and cooking of food, and explains that foods are classified as digestible, indigestible, high in superfluities, or low in superfluities, and the like.

The next few books deal with the non-naturals. On the subject of evacuation, there is a lengthy book devoted to blood-letting: its advantages and disadvantages, the indications for blood-letting, and how much blood to remove. It ends with a detailed and fascinating account of the technique of blood-letting, what instrument to use, what shape incision to make, whether along the length or width of the vein, and what to use to keep the vein patent. Al-Masīḥā’s contemporary in Spain, Abū’l-Qāsim al-Zahrāwī, also left a long and detailed account of the technique of venesection and its indications.\textsuperscript{36} Book 29 is on the signs of psychical origin, such as grief and anger. The observation is made here that anger leads to a yellow complexion, due to an increase in yellow bile. This brings to mind the use in this connection of the English word “choleric” and its obvious humoral origin.

Books 30 to 34 are concerned with the faculties of medicines and their classification. The subject of medicines was of the utmost importance to mediaeval physicians. Here is a clear exposition of the theoretical approach to the use of medicines in terms of their qualities and their special actions, whether purgative, diuretic, emetic, and so forth. The author encourages the use of “empirical medicines”, (muejarbāt), but stresses that where possible, only one drug should be used at a time. These muejarbāt are of some interest; many books were devoted to this subject during the Arabic period, including those by al-Kindī, al-Rāzī, Ibn Sinā, Ibn Zuhr, Ibn al-Tīmīdī and many others. Sarton\textsuperscript{37} was very impressed with the tradition of muejarbāt, and held that it represented the earliest example of an experimental method in medicine. But in fact, the muejarbāt were nothing to do with the experimental method but were rather medicines which had been found to work by experience.\textsuperscript{38} Many of them had obvious magical associations, particularly in the later writings of the 14th century and onwards.

The book on simples classifies them in alphabetical order, using the earlier type of Arabic alphabet (which follows the Hebrew order). Under each medicinal herb, there is a definition of its properties according to degrees from 1 to 4. Thus, a medicine is described as ‘cooling in the first degree’ and ‘drying in the fourth degree.’ Its special effects and properties, diuretic, purgative, binding, etc. are then listed. For example, (f.135 b, l.6 – l.8)


\textsuperscript{34} See M. Meyerhof, “Ibn al-Nafis’s (XIIIth century) and His Theory of the Lesser Circulation”, Isis, 23 (1935), 100-20.

\textsuperscript{35} Transl. by M. T. May, Cornell University Press, 1968.


\textsuperscript{37} Sarton, op. cit., II, 94.

\textsuperscript{38} In this, one must agree with Ullmann who takes issue with Sarton in his special section on muejarbāt, (Die Medizin, op. cit., pp. 311-3).

\textsuperscript{39} For a study of the Galenic system of drug classification, see G. Harig, Bestimmung der Intensität im medizinischen System Galens (Berlin, 1974).

\textsuperscript{40} Al-Majūsī devotes a large section of his book (op. cit. above) to this classification of drugs.
and urine are also listed here. Book 32 continues an account of drugs classified according to their qualities, degrees, and special effects; that is, under “heating medicines in the first degree”, there follows a list of substances; under “those medicines which attract the humours”, another list of substances, and so on.

Book 35 discusses the classification of diseases, their causes, and their signs. As if by way of introduction, al-Masḥīḥ explains something of the nature of all diseases:

(f. 164b, 1.15 – 1.20)

“Diseases, their causes, and their symptoms are all contranatural matters. The purpose of the art of medicine is to remove them all, in order of priority. For (although) that which is intended to remove first is the disease, because it is what is harmful in fact, (yet) it will not be removed unless the cause which has brought it about is removed (first)”.

There then follows a classification of diseases according to the four primary qualities with examples to illustrate each type, and according to the compounds of the primary qualities, and whether these are accompanied by matter or not. As to the causes of disease, he classifies them and explains this in the way:

(f. 167b, 1.15 – f.168a, 1.1)

“The causes of disease are of three kinds: the first is that of the immediate causes; the second is that of the antecedent causes; and the third, that of the connecting causes. The immediate causes are those which affect the body (but) are external to it, like the strong heat of the sun which gives rise to fever. As to the causes which affect the body from inside, if there is a connection between them and the disease, then it is an antecedent cause. But if there is no (causal) connection between the disease and one of them, then that is a connecting cause”.

This classification is in fact very similar to the Galenic classification of the types of causes, as explained in his tract De Causis Contentivis. The latter survives only in Arabic translation.41

The subsequent books have detailed discussions on the signs of psychical ailments, on secretions evacuated from the body, and on fevers. The book on fevers is devoted to the theoretical understanding of the nature and differentiation of fevers. He defines fever as a contranatural heat; the site of this heat in the body determines the type of fever it is, as follows:

(f. 194a, 1.15 – f. 194b, 1.2)

“When the heat is in the spirit, it is an ephemeral fever; it goes either in one day or in one paroxysm. If it stays for longer than one day, and when (the heat) is in the humours, then it is a putrid fever. Putrid fever may be continuous, and that is when its matter is confined to the veins, or it may have periods and paroxysms, and that is when its matter is outside the veins. When (the heat) is in the organs, it is a hectic fever.”

His account of fevers follows this pattern and makes the subject, which must have posed the physician of the time the greatest diagnostic difficulties, seem simple and straightforward. Book 41 is on the signs of diseases of various parts of the body. The next book gives an account of the signs of the temperaments. This describes the signs of a hot, cold, wet, dry temperament, and compounds of these (i.e. hot-dry, cold-wet, etc.), and how the temperament may be diagnosed from the colour, the facial expression, the touch, and the actions. The temperaments of organs are also included. There is a section on the indications from the facial features, the teeth, the nails, and the skin as to the temperament (for example, a hairy chest indicates a hot temperament of the heart). This science, (physiognomy, Arabic: al-firāsā), was a most important subject in Arabic medicine. Al-Rāzī has a large section on it in his K. al-Manṣūri, and several Greek works on the subject were available in Arabic translation from the time of Ḫunayn ib. Ishāq.42

Book 44 is on respiration and forms a compact and interesting account of the physiology of respiration of the time. There is a reiteration of the doctrine of spirits and a discussion of their entry and elaboration in the body.

41. This tract has been translated from the Arabic by M. C. Lyons as On the Cohesive Causes, in Corpus Medicorum Graecorum Supplementum Orientalis, II, (Berlin, Akademie-Verlag, 1969).

42. Notably, the book on physiognomy of the Greek sophist, Polémus, which survives only in Arabic translation as K. Iftimūn fi‘l-firāsā. The material here is very similar to that in K. al-Mi‘a.
The function of air is to be a cooling agent for the heart, which is conceived of as a furnace wherein the innate heat burns. The lung therefore acts as a bellows to cool the heart. Thus,

(f. 216b, 1.10 – 1.14)

The lung expands and contracts with the expansion and contraction of the chest. When it expands, its cavities fill with air, and when it contracts, the smoke of the heart which has been expelled to it is expelled to the exterior. For respiration is the means whereby the heart obtains the air with which it is fanned and (hence) its heat remains moderate and pure, and from which is created the animal spirit by whose agency the life force and the innate heat reach the rest of the body.\(^{43}\)

These ideas on respiration are very similar to the ideas expressed by Aristotle and Galen, in particular the concept of the bellows and the burning furnace wherein combustion takes place, and hence the need to expel the ‘smoke of the heart’.\(^{43}\) The next 9 books deal with ‘pathology’, for they concern the pulse, the urine, and features, and their features in health and disease.

The book on the pulse is complicated and detailed. Pulse lore was a most important aspect of the Arabic medical system. Arabic physicians routinely described 10 kinds of abnormal pulse. These went under certain names, such as the ‘mouse-tail pulse’ and the ‘gazelle-like pulse’, and their patterns were intricately described. This seems to have been a theoretical artifice more than anything else, and it is doubtful whether anyone actually ever felt most of what was described. Of no less importance was the subject of the urine. Al-Masālik goes into the matter of uroscopy at length and in great detail, with great emphasis on its pre-eminence in the art of medicine. He explains how urine is formed from the watery part of blood and stresses that its examination will give information about many internal conditions. The different kinds of pathological urine are described, which, like the kinds of pulse, were common to all Arabic medical writing.

The following books deal with several important subjects: on the anticipation of illnesses by warning signs, which was a review of signs of prognostic significance, (this is to be differentiated from prognosis, which is the subject of book 54); the periods of disease, meaning the four stages of disease as classified by Greek and Arabic physicians: commencement, increase, culmination, and decline; and the three cornerstones of mediaeval disease theory: coction, crisis, and critical days. The subjects are dealt with in a characteristically detailed and lucid manner, and the accounts are exactly in line with the earlier Greek teaching and with the other Arabic books on the same theme.

There are three books on the preservation of health. These include the healthful regimen to be adopted at various ages. Attention is to be paid to the diet, sleep, movement and rest, baths, massage, psychical events, and the ambient air – in other words, to the six non-naturals. This matter was a regular component of Arabic kunnéšhat, and was also treated as a separate subject, as the many Arabic tracts on hygiene testify. Book 59 is on the principles of the treatment of diseases, and contains a clear statement of the physician’s function with regard to disease and its management:

(f. 267a, 1.12 – 1.14)

The physician acts as an assistant to nature, in that he brings to it medicine and other things either internally or externally, in the correct amounts and at the correct times. For he aids (nature) to attain what strengthens it and assists it in repulsing the disease. In this way, nature repuls and eliminates many diseases without either medicine or physician, nor can either medicine or physician eliminate a disease once the strength has collapsed and become impotent.\(^{44}\)

Thus, here is a clear adherence to the Hippocratic attitude with regard to the importance of nature and to its standing as the real physician. There is then a detailed and highly systematic account of the things which have to be taken into account when deciding on the correct treatment. It is only at this point in the work that practical directions as to the management of specific diseases are given, but even then, there is little emphasis on therapeutic detail. The next series of books represent the head-to-toes disease section of the book. There is an unusual tendency to classify some diseases according to functional and pathological considerations rather than on the basis of pure anatomical site.

43. There is a similar description in Aristotle’s De Respiratione, transl. by W.S. Hett, Loeb Classical Library, (London, Heinemann, 1957), p. 479; and at greater length in Galen’s On the Usefulness of the Parts, op. cit., 1, 316.

44. Qustā b. Ḵoṭb, Ḵisāq b. ʿImrān, Ibn Sinā, Ibn al-Muṭrīn, and many others wrote separate tracts on hygiene.
For example:

"Book 65: The treatment of diseases occurring in the organs of sensation and motion, that is to say, the treatment of spasm, tetanus, flaccidity, numbness, and tremor".

"Book 79: the treatment of gastric evacuations, that is to say the treatment of cholera, dysentery, and lientery".

In general, the head-to-toe disease section of K. al-Mi’a is relatively short and relegated to a place of secondary importance. All chapters on disease are short and contain a cursory account of causes and symptoms. This is unlike the practice employed in many kunnāshāt of the time, where the head-to-toe diseases were given a place of pre-eminence as being the main subject matter around which the other principal subjects of medical theory were arranged. The reason for this departure in al-Mašhāl’s book is evident from the fact that he devotes considerable space to the theoretical principles underlying the causes and mechanisms of disease, symptoms, and therapy. Hence, when he comes to the description of actual disease entities, he is very brief on their specific features, having already explained their general characteristics at length.

The account of epilepsy is a typical illustration:

(f. 282, 1.4 – 1.11)

قد يكون من آفة مخصصة للدماغ ويكون من مشتركة المعدة ويصمد من الأطراف كاراجل أو البأ أو مشتركة الرحم للناس بأن يصمد من كل واحد من هذه الاضاءة ما يسمى مناظر پطن الدماغ، فيحدث الصرع فإنه يصمد من بعض الأطراف فينفي في وقت النوبة قبل ظهورها أن يضيق على ذلك الموضع برغط شدها عمداً أن تقطع النوبة ثم يقول النوم بالملل والحرمال والفر مؤن وسل البلاد ويرك على مخاً.

"(Epilepsy) may occur from a malady specific to the brain, or it may occur in association with the stomach and some of the extremities, such as the leg or the hand; or because of association with the womb in women. Thus, something ascends from each of these organs which obstructs the apertures of the ventricles of the brain and so epilepsy occurs. If it ascends from one of the extremities, it will be necessary at the time of the fit and before it happens to bind (the part) above that place with a firm, tight bandage until the fit is stopped. Then the part should be painted with pepper, castor, euphorbium, and anacardium honey, and left until it blisters”.

It will be readily seen that there is no clinical description here. The rest of the chapter is concerned with therapy, which is given in some detail.

The list of diseases described goes down through the body in descending order. After the books on diseases of the urinary tract, there is a short section on the uterus and on pregnancy. This is followed by a book “on the treatment of diseases special to men” and concerns inflammations and ulcers of the genital organs. But it also includes something on what may be termed “sexual medicine”.

This is concerned with the ill effects of sexual over-indulgence and not with ways of increasing pleasure, as is to be found in the comparable sections of some other kunnāshāt.

The head-to-toe diseases end with gout and sciatica. The books after that are on external, or skin diseases. This includes the conditions affecting the hair such as alopecia and splitting of hair, and the disorders of the complexion like vitiligo, and the scars of smallpox and ulcers, as well as other skin diseases. Such a section on external diseases was a standard component of all kunnāshāt. It also included a certain amount on cosmetics: such matters as the drying and curling of hair, the removal of unwanted hair and remedies for purifying the complexion and changing its colour. The external disease part of K. al-Mi’a, however, has very little cosmetic emphasis and no directions for the drying or curling of hair. Book 99 is on fractures and dislocations. It is a short chapter and describes the general treatment of the body when a fracture takes place: this consists of evacuation and blood-letting in order to prevent the seepage of humours from the fracture site. There are some directions on how to correct dislocations and fractures and on binding the affected part.

But it is unlikely that such brief directions as are given would have been of much use to an orthopaedic practitioner. What is more likely is that, as this was a routine inclusion for most kunnāshāt, it was included here for the sake of completeness and does not necessarily imply that the author had ever practised any of the procedures he describes or that he intended them for practical purposes.

The last book is on another standard inclusion of kunnāshāt, namely, the bites of venomous animals: these include the snake, scorpion, tarantula, and wasp; there is also a chapter on the bites of rabid dogs, again a favourite subject with Arabic physicians. Snake and scorpion bites are treated, as might be expected, with the theriae, since theriae were originally made up as antidotes, and it was only later that their use became widespread as universal panaceas. The book does not deal with the bites of large animals, such as lions,
hyenas, and tigers, as many other kunnāshāt did, nor does it mention poisonous substances or medicines, as was also usual.

Comment

It should be clear from the foregoing description of contents that K. al-Mi‘ā is a large, comprehensive work which attempts to systematise the whole of medical theory. The major part of the book is devoted to theoretical considerations, and only a small part deals with practical procedures. There are no quotations from other medical authorities, a practice common to many kunnāshāt, where a quotation from an Arabic or Greek physician was often added either to lend support to the writer’s opinion or to provide additional information on the subject under discussion. There may have been other reasons also. The general style of the book is authoritative and it may be that the author’s sense of his own authority made the inclusion of the sayings of others unnecessary. Be that as it may, it is easy to see why such scholars as Leclerc and Sarton saw K. al-Mi‘ā as a model for Ibn Sinā’s Canon. Its encyclopaedic range, extreme systematisation, and authority are indeed reminiscent of the Canon.

In a sense, it may have even been preferable to the Canon. For, the scholarship of the Middle Ages which was so inclined to favour rigid classifications and compact systems might well have welcomed the relative brevity of K. al-Mi‘ā. Furthermore, al-Masīḥī’s book is written in a lucid and didactic manner that would have made it of the greatest use to the mediaeval pedagogic tradition. It is extraordinary therefore to observe that al-Masīḥī’s encyclopaedia was not known to the Latin West.

This of course raises the unresolved question of why certain Arabic works and not others were translated into Latin. From the point of view of subject matter and form, K. al-Mi‘ā should have been ideal for the Latin mediaevalists. Its omission from their translations is difficult to explain. Of course, it is known that the bulk of translation from Arabic into Latin was carried out in Spain, and therefore the choice of material for translation must have been dictated in part by the availability of books in Toledo and other Spanish centres of translation. We do not know what efforts were made by the Latin translators, if any, to obtain books from elsewhere in the Islamic territories. If they translated only what was available to them in Spain, then the choice of book was indeed dependent on its being present there. This raises the further question of why K. al-Mi‘ā was not available in Spain. In fact, as noted earlier, none of al-Masīḥī’s other books were translated into Latin either, nor does he himself seem to have been known to the Latin West. This is indeed a puzzle. Why, for instance, should ʿAli b. al-ʿAbbās al-Majūsī’s kunnāshāt, Kāmil al-ṣinā‘a, have been translated into Latin and not K. al-Mi‘ā? These writers are quite comparable to each other; both were Persians and wrote their books in Persia within 50 years of each other. Thus, the problem of geographical diffusion should have been the same for both. The books are comparable in scope and style. Al-Majūsī’s book is a large two-volume encyclopaedia on the whole of medicine, theory and practice. Like K. al-Mi‘ā, it discusses every aspect of medicine and classifies its subject-matter in the same thorough way. The accounts are of the same order of lucidity and precision. Kāmil al-ṣinā‘a is likewise written with great authority. However, there is a difference between the two in the amount of space given to practice as opposed to theory. In this sense, Kāmil al-ṣinā‘a is the more balanced, for half of it is on theory and half on practice, whereas, K. al-Mi‘ā is mainly devoted to theory, as has been shown above. This is in line with al-Masīḥī’s purpose in writing the book, for he says in his introduction:

فأقام هذا العلم جزء ما يوجد عليه في نفسه أما من قبله فتثرب ويحلص وما في الجزار النظري منه فإن يلم وصيح وأما في اللاحاجات فلا يححد ويقرب فستنت هذه الأشرطة كالكحوذ والطمسة دنيا نجرح أصح وأوث وسهل واصغر ما أمكن.

“This science, by its present nature, requires that it should be arranged in its entirety, simplified, and summarised. As to its theoretical part, this should be made complete and corrected; and as to its therapeutic part, this should be condensed and made more accessible. So I fulfilled all these conditions to the utmost of my capacity, and (the book) emerged more correct, complete, and easy to use, and as short as possible.”

And further on in the introduction, he adds this:

فقد أكثر الكلام في التصريف في صناعة الطب والجراح الغلاط منه زائد على المدار والواجب.

47. Such quotations have been of the greatest value to modern scholarship. For example, Ibn al-Jazā‘ā’s book, Zīd al-Maṣūfa, provided Duremberg during the last century with important fragments of Rufai’s medical writings which he incorporated into his Oeuvres de Rufus d’Éphèse (ed. C. Duremberg and E. Ruelle, Paris, 1879). ʿAli b. Rabban Ṭabarān’s Firdaws al-silm is also a rich collection of poetry from Greek, Arabic, and Indian sources. Pseudo-Thābit’s K. al-Dhakhīra fi ‘ilm al-jibb, (ed. by G. Sobhy, Cairo, Government Press, 1928) also transmits many quotations from others.

48. ʿAli b. al-ʿAbbās al-Majūsī lived and worked during the reign of the Persian rulers, ʿAṣuf al-Dawla (949-982). Very little is known of his life (see IAU, i, 236; al-Qīfī, op. cit., p. 232; CAL, I, 327; SI, 423). His book, Kāmil al-ṣinā‘a, also known as al-Kiṣṣa al-Malaki (because it was dedicated to ʿAṣuf al-Dawla), was translated into Latin by Constantine the African as Liber Panagei in the 11th century, and by Stephen of Antioch as Liber Regius in 1127, and enjoyed great fame and popularity in mediaeval Europe. (See Leclerc, op. cit., II, 359 and H. Schippers, Die Assimilation der arabischen Medizin durch das lateinische Mittelalter, Studheis, Archiv, Beilage, Heft 3, Wiesbaden, 1964, p. 35).
"Much has been said about the composition of (books on) the art of medicine, and the part of it which is on therapy is dealt with far more than is necessary, (while) the theoretical part (is dealt with) far less than is necessary."

It is possible that the concentration of theoretical matter and the dearth of description of practical procedures rendered it less useful and so less popular than al-Majusi’s book. And hence, it never diffused to the West like the other book. The same fate seems to have befallen another kunnašī written within 50 years of K. al-Mi‘a and contemporary with al-Majusi’s book, perhaps for the same reason. Al-Mu‘adžaj al-baugrašīyya is a large system of medicine in 10 maqāla compiled by Abū‘l-Ḥasan Abū mad al-Ṭabarī, the court physician to Rukn al-Dawla (932-976). This book has a similar arrangement of subject matter to K. al-Mi‘a and deals with all the classical topics of medical theory. Diseases are likewise set out in the usual head-to-toe arrangement. The book is heavily biased towards theoretical discussion and is of high intellectual calibre. Relatively little attention is paid to matters of practical importance and it could not have had much appeal for the average practitioner. The author explains in the introduction to the book that he has compiled it in order to salvage medicine from the hands of the ignorant and the superficial, and to return it to the tradition of the ancients he so admires. The result is not unlike K. al-Mi‘a, except that it is perhaps less lucid and complete. This book likewise did not claim the attention of the Latin translators, nor was its author apparently known in the Latin West. In recent times, its fourth maqāla, which is on ophthalmology, was studied by Hirschberg, and some of its sections on diseases of the skin were translated into German by Mohammed Rihab. Otherwise, it has remained relatively unknown.

Despite these considerations, the question with regard to al-Masī‘ī’s book must remain largely unanswered. It must be said in conclusion that the omission of this book from the mediaeval list of translations deprived the West of an important compendium, equally as valuable as al-Majusi’s Kāmil al-šī‘a and of the same calibre as Ibn Sinā’s Canon.

49. Some meagre facts about al-Ṭabarī’s life are to be found in IAU, I, 321. See also GAL I, 237.
50. See also GAL I, 422.
51. There is a complete manuscript of this work in the Bodleian Library, Oxford, Marsh 150.

Notice of an Important al-Jazari Manuscript

DONALD HILL*

This notice refers to a manuscript of al-Jazari’s book on machines entitled The Book of Knowledge of Ingenious Mechanical Devices, or A Compendium on the Theory and Practice of the Mechanical Arts. It had previously been thought that the manuscript of this work dated 715/1315 had been completely dispersed; see, for example, Hill op. cit. p. 5, and Ahmad Y. al-Hassan in Vol. I, No. 1 of this journal. Happily, this assumption proved to be incorrect, since about two thirds of the original manuscript, the property of the Hagop Kevorkian Fund, was included in Sotheby’s Spring Islamic Sales on 3rd April 1978 in London. As reported in “The Times” of 4th April 1978, the manuscript was purchased by Messrs. Spink and Son of St. James’s, London for a little over £160,000. I would at the outset like to express my sincere gratitude to these two highly respected and responsible companies for the courtesy and co-operation that they have extended to me in the furtherance of my researches. Sotheby’s gave me access to the manuscript before it was sold, and sent me a number of colour transparencies of the illustrations. I had fruitful discussions with members of the staff of Spink and Son, who provided me with a complete black-and-white photocopy of the manuscript. I am also very grateful to both companies for having given me permission to publish this paper, and to include in it, as I saw fit, any of the material that they so generously provided.

Some time ago a number of the illustrations were removed from the manuscript and found their way into various public and private collections. In my book I published twenty-one of these illustrations, these being all that I was able to trace. There are, however, 66½ illustrations missing from the manuscript sold by Sotheby’s, so clearly a number remain undiscovered. Most of the lacunae in the manuscript can be accounted for by the removal of these illustrations, since either the accompanying demifolios of text or the surrounding text were removed with the illustrations.

The manuscript is written on thick polished paper, 314 mm. by 219 mm. to the page, in very fine nasuki script with 21 lines to the page. The colophon is 207a (Persian pagination – see below) gives the name of the scribe as Farkh ibn “Abd al-Laṭif and the date of his copy as the end of Ramaḍān

* 3 Amey Drive, Great Bookham, Surrey, England. I wish to express my gratitude to the Royal Society for awarding me a grant in 1978/79 to assist me in my work on medieval Arabic technology.