

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

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Introduction

The *kunnāsh*¹ (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 acquaint the reader with all the essentials of medicine without overloading him with too much detail. Many *kunnāshāt* declared this to be their explicit aim in their introductory remarks.² As time went on, the *kunnāsh* became the preferred type of medical work, to the despair of such educational purists as Ibn Riḍwān who strongly deprecated the substitution of these derivative works for the original works of the ancients.³

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

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1. The word *kunnāsh* is interesting. It does not appear to be of Arabic derivation, but comes from the Syriac *kunnāsha* (M. Ullmann, *Wörterbuch der klassischen arabischen Sprache*, Vol. I (Wiesbaden, 1970), p. 387, 20 A.

2. For example, ʿAlī b. al-ʿAbbās al-Majūsī (fl. 949-982) writes in the introduction to his *kunnāsh*, *Kāmil al-ṣināʿa al-ṭibbiyya* (Cairo, Bulaq, 1294/1877), Vol. I, p. 7, l. 28f, that he has composed his book:

"That it might be easy (for physicians) to find one book which contains all that is necessary (in medicine). I will not leave out anything that might be needed by students and learned scholars."

3. Ibn Riḍwān was an 11th-century physician of Cairo (d. 1061) who took a great interest in the medical education of his day. For his biography, see Ibn Abī Uṣaybiʿa, *ʿUyūn al-anbāʾ fī ṭabaqāt al-aṭibbāʾ* (henceforth: IAU) ed. A. Müller, (Königsberg, 1884). He wrote a tract on this subject, *al-Nāfiʿ fī kayfiyyat taʿlīm ṣināʿat al-ṭibb* ("the useful book on the quality of medical education"). The relevant extract is quoted by A. Z. Iskandar in his, "An attempted reconstruction of the late Alexandrian medical curriculum", *Med. Hist.*, 20 (1976), 241.

One wonders whether the *kunnāsh* type of book was not always preferred, almost from the beginning of the translation movement from Greek and Syriac into Arabic. *Kunnāshāt* in Syriac were certainly available before 700 A. D. and came to be written in Arabic from 800 A. D. onwards.

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.

Kunnāshāt were used for practical purposes as manuals for medical practitioners and also for the teaching of practitioners and medical students.⁴ The relative emphasis on these two functions varied from one *kunnāsh* to another. For example, some *kunnāshāt* 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;⁵ 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 *kunnāshāt* were useful for teaching purposes and could also be read by the intelligent and educated layman. Abū Sahl al-Masīhī's *kunnāsh* entitled *Kitāb al-miʿa fī l-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, Nuʿmān b. ʿAlī al-Riḍa al-Isrāʾīlī, composed a synopsis of it which was edited by Sharafī in 1959.⁶ 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-Masīhī's books.

Abū Sahl al-Masīhī's Biography

Abū Sahl ʿIsā b. Yaḥya al-Masīhī 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-Jazzār's introduction to his book, *Zād al-musāfir wa qūt al-hādir*.

5. Such a book is Ibn Buṭlān's *Kunnāsh al-ruḥbān wa l-adyira*, which is a simple manual of diseases and their treatments.

6. Qadri Sharafī, *Al-Hawāshī al-nuʿmāniyya wa l-maqāsid al-ṭibbiyya*, (Hyderabad, 1959). (I have not seen this work). There is a manuscript of the synopsis at the Bibliothèque Nationale, no. 2883. See M. G. de Slane, *Bibliothèque Nationale, Catalogue des Manuscrits Arabes* (Paris, 1883-95), p. 518.

He describes him as a "practitioner" (*al-mutaṭṭabbib*) and a logician (*al-manṭiqī*), presumably implying by the latter description that he was interested in or had written works on logic. He wrote a famous *kunnāsh* called *al-Mi'at maqāla* (more usually known as *Kitāb al-mi'a fi'l-ṭibb*). He died "in middle age" at the age of 40. Ibn Abī Uṣaybi'a is able to give more information about him:⁸ 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 Uṣaybi'a says that he examined a copy of al-Masīhī's book, *Fi Izhār ḥikmat Allāh ta'āla fi khalq 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 Muḥadhdhab al-Dīn 'Abd al-Raḥīm b. 'Alī said of al-Masīhī: he had never known any Christian physician, either ancient or modern, who could express himself as well as al-Masīhī. (All this implies that al-Masīhī'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 Uṣaybi'a says that al-Masīhī is said to have been the teacher of Ibn Sīnā 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-Masīhī was indeed Ibn Sīnā's teacher. Ibn Sīnā himself asserts in his autobiography that he had no teachers in medicine,⁹ not that that necessarily rules it out completely. But al-Qiftī makes no mention of this claim either.¹⁰ The two men are, however, connected in the Persian 12th-century work, the *Chahār Maqāla*, where the story is recounted that when both of them took flight from the court of the ruler of Khwarizm Abū'l-'Abbās Ma'mūn (1009-1017), they were overtaken by a sandstorm in which al-Masīhī died.¹¹ The *Chahār Maqāla* extols the virtues of al-Masīhī and calls him the successor in philosophy to Aristotle. His book, *Kitāb al-Mi'a*, is recommended as part of the syllabus for medical students.¹²

Ibn Abī Uṣaybi'a provides a list of al-Masīhī's books. He begins with *K. al-Mi'a fi'l-ṭibb*, considered to be the best and most famous of his books. There are three other titles of books on medicine, three on philosophy, and one book, *Fi'l-Wabā'* which he dedicated to the ruler of Khwarizm, Ma'mūn

7. Al-Qiftī, *Ta'riḥ al-ḥukamā'*, ed. J. Lippert, (Leipzig, 1903), pp. 408-9.

8. IAU, I, 327-8.

9. Al-Qiftī, *op.cit.*, p. 414.

10. *Ibid.*, p. 408.

11. Nizāmī-i 'Arūḍī. *Chahār Maqāla*, ed. and transl. by E. G. Browne. (Cambridge University Press, 1921), pp. 88-9.

12. *Ibid.*, p. 79.

b. Muḥammad (992-1009), (the father of Abū'l-'Abbās Ma'mūn b. Ma'mūn mentioned above). Al-Bayhaqī¹³ also links al-Masīhī with this ruler, for he says that the patron of al-Masīhī was the king of Khwārizm, Ma'mūn b. Muḥammad, to whom he dedicated another of his works, *K. Ta'bir al-ru'ya* ("the interpretation of dreams").

As to his dates, there is the usual difficulty with determining these exactly. Wüstenfeld,¹⁴ who describes him as the teacher of Ibn Sīnā, gives his date of death as being around 390/1000, though on what evidence is not clear. Sarton¹⁵ gives a similar date, saying that al-Masīhī died aged 40 in 999-1000. Leclerc,¹⁶ likewise, puts his date of death at 1000. (It should be pointed out that all these authorities, presumably following Ibn Abī Uṣaybi'a, state that al-Masīhī was Ibn Sīnā's teacher). Brockelmann,¹⁷ however, gives the later date of 401/1010, as does Ullmann.¹⁸ Sezgin¹⁹ cites a manuscript of one of al-Masīhī's works which is dedicated to Abū'l-'Abbās Ma'mūn (1009-1017). If this is indeed the case, and the book was not in fact dedicated to his father (as noted above on the authority of al-Bayhaqī), then the later date will have to be accepted. It is certain at least that al-Masīhī was alive in 1002, for it is known that Ibn Sīnā dedicated a missive to him from Jurjān in that year.²⁰ From this information, all that can be said is that al-Masīhī was alive in 1002 and died some time after 1009.

Kitāb al-Mi'a fi'l-Ṭibb

Seven works of al-Masīhī survive: the best known is *K. al-Mi'a*. It was considered by the famous physician Ibn al-Tilmīdh, who wrote a gloss on it, to have been of the greatest value because it was exact, not repetitious,

13. Ṣāḥib al-Dīn al-Bayhaqī, *Ta'riḥ al-ḥukamā' al-Islām*, ed. M. Kurd 'Alī, (Damascus, Maṭba'at al-Ṭarāqī 1946), pp. 88-9.

14. F. Wüstenfeld, *Geschichte der arabischen Aerzte und Naturforscher*, (Göttingen, 1840), p. 59, No. 118.

15. G. Sarton, *Introduction to the History of Science* (Baltimore, Williams and Wilkins, 1927-48), I, 678.

16. L. Leclerc, *Histoire de la Medecine Arabe*, (Paris 1876), I, 356-7.

17. C. Brockelmann, *Geschichte der arabischen Litteratur*, (henceforth: GAL) and *Supplement* (henceforth: S), (Leiden, Brill, 1937-42), I, 238: SI, 423.

18. Ullmann, *op. cit.*, p. 151.

19. F. Sezgin, *Geschichte der arabischen Schriftums* (Leiden, Brill, 1967), III, 327, No. 6, *Risāla fi taḥqīq sū' al-mizāj mā huwa wa kam aṣnāfuhu*, MS. Shehid Ali, 2095/5.

20. IAU, II, 19, 1.10-11, lists this among Ibn Sīnā's works: "A missive to Abū Sahl al-Masīhī on the angle, which he wrote in Jurjān". It may be calculated from Ibn Sīnā's autobiography, (*The Life of Ibn Sina*, ed. and transl. by W. E. Gohlman, (State University of New York Press, 1974), that he was in Jurjān in 1002.

well written, and provided a wide selection of treatments.²¹ It was recommended for use by students in the medical teaching syllabus of the *Chahār Maqāla*, 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 Sīnā's *Canon*.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.²³ There are six other early manuscripts, that is, dating from before 1300 A.D.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 1300/1883.²⁵ 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.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:²⁷ they

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

22. Leclerc, *op. cit.*, I, 356-7; Sarton, *op. cit.*, I, 678.

23. This MS., Istanbul, Nuruosmaniye 3557, is described by Dietrich, (A. Dietrich, *Medicinalia Arabica*, Göttingen, Vandenhoeck and Ruprecht, 1966, p. 70). The dating is only presumptive.

24. The manuscript citations for these are to be found in GAL, I, 238; SI, 423; and Sezgin, *op. cit.*, III, 326-7.

25. The most recent is MS. Tehran, Danishkada-i Pizishki, 247/1.

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'Egypte", 1975, pp. 88-90).

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 *kunnāshāt*, both Greek and Arabic, is to be found in the introduction to al-Majūsī's *Kāmil*.

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 encyclopaedia 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 Hunayn b. Ishāq's pithy introduction to medicine, *al-Masā'il fī'l-ṭibb*).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 *kunnāsh*. In this way, it may be seen that all the standard topics in medicine which were 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,²⁹ which are six and which may be picked out among the list of subjects early on in the *kunnāsh* as air, food and drink, sleep and waking, movement and rest, evacuations (detailed into purgation, 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 *kunnāshāt*. Likewise, there is the inevitable classification of diseases from head to toe,³⁰ and the other two classical subjects: fevers

28. This work, alternatively known as the *Isagaoge*, 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.)

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

30. This was a classification that was universally employed in Arabic medical textbooks and in the Greek medical books of late antiquity.

and external diseases. The external diseases section here is subdivided into diseases of the scalp, the skin, and the skin colour. Two other topics, which were also very commonly included in medical compendia, although not uniformly so, appear: fractures and dislocations, and venomous bites. Several books are devoted to the subject of medicines both, simple and compound, matter of the highest importance in any medical book.

Subjects of Books in K. al-Mi'a

Introduction to medicine	Psychical ailments
The elements	Secretions evacuated from the body
The homeomerous organs	The types of fevers
The anhomeomerous organs	Swellings
The usefulness of the parts of the body	The signs of diseases of various parts of the body
The humours	Respiration
The temperaments	The pulse
The faculties	The urine
The actions	The faeces
The spirits	Premonitory signs
The natural states of the body	Periods of disease
Airs and winds	Cocotion
Dwellings and waters	Crisis
Faculties and qualities of foods	Critical days
Drinks and wines	Favourable and unfavourable signs
Sleep and waking	The signs of disease
Massage	The preservation of health
Movement and rest	Principles of treatment of diseases
Baths	The treatment of fevers
Purgation	The treatment of swellings
Emesis	The treatment of ulcers
Venesection	Diseases from head to toe
Diuresis	Pregnancy and diseases of the uterus
Perspiration	Diseases special to men
Gargling	Diseases of the hair
Clysters	Scars of ulcers
The signs of psychical origin (grief, anger, etc..)	Disorders of skin colour
Faculties of medicines	Diseases of the skin
Simples	Fractures and dislocations
Medicines with special properties	Bites of venomous animals
Causes and signs of disease	

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)

والاجسام الاول بالطبع اربعة النار والهواء والماء والارض وإنما سميت اجساما أول لأنها لا تتركب ولا تتكون من اجسام آخر غيرها... والبدن مركب من الاعضاء المتشابهة الاجزاء وكل واحد من هذه قد يكون إما أولا في المني وإما من بعد ذلك في الدم والمني يتكون من الدم والدم من الغذاء والغذاء إما حيوان وإما نبات والحيوان حال بدنه كحالك بدن الانسان فاذا من النبات والنبات يتكون من الارض والماء فاذا بدن الانسان مركب من الاسطقات الأول .

"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, wet, dry, 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)

والاخلاط وهي اربعة الدم والخلط الأصفر والخلط الاسود والبلغم وحصولها كلها في البدن بسبب الغذاء بمعنى أن بعضها غذاء وهو الدم وبعضها فضولات الغذاء وهي الثلاثة الاخلاط الباقية لأن البلغم فضلة متقدمة على الدم لأن الغذاء لم ينهضم ولم ينضج فبقي على نبوته والخلط الاصفر والخلط الاسود مجاوران لطبيعة الدم لانهما قد صارا في حد الاحتراق ووجودها كلها في البدن طبيعي بمعنى أن الدم هو الغذاء الحقيقي المقصود والبلغم خلط يمكن أن ينهضم فيفتدي به البدن .

"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 cocotion 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-Masīhī explains how it is that they cause disease:

(f. 30b, 1.12 – 1.15)

وهذه هي الاخلاط التي تسمى اركان البدن وأما إذا زادت على هذا المقدار أو الكيفية فخارجة عن الطبع لسبب مرضي ويجب ان تعدل إن كانت مفرطة الكيفيات وتستفرغ إن كانت كثيرة المقادير .

"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)

فإن للبدن أربع قوى أحداها نفسانية وهي التي تفعل الاحساس والتمييز والتحريك بالاختيار والثانية حيوانية وهي تعطي جميع البدن الحياة والحرارة الغريزية والثالثة طبيعية وهي التي تعطي جميع البدن الغذاء وتدفع فضولاته والرابعة مولدة وهي التي تعد الزرع وتكمل الجنين وقد تعد في صناعة الطب القوة المولدة مع القوة الغازية ويسمى جميع ذلك 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 prolixity and disorganisation of Galen's work on the same theme, *On the Natural Faculties*.³¹ The other books on the temperaments, 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 'homeomerous' and 'anhomeomerous' types.³² 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)

والقلب صنوبري الشكل قاعدته الى جهة أعالي البدن ورأسه المخروط الى جهة أسافل البدن وقاعدة القلب موضوعة في وسط الصدر ومن جميع جهاتها ورأسه المخروط مائل إلى ناحية اليسار وللقلب غلاف من غشاء كثيف محيط به ،تميزا منه إلا عند قاعدته وفيه تجويفان احدهما في الجانب الايمن والآخر في الجانب الأيسر وفي التجويف الأيمن الدم أكثر من الروح وفي الأيسر الروح أكثر من الدم ومن الايمن الى الايسر منافذ لطيفة .

"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-Rāzī's famous *kunnāsh*, K.

31. Translated by A. J. Brock, Loeb Classical Library (London, Heinemann), 1928.

32. Cf. Aristotle, *De Partibus Animalium*, 646b, 11-20, in *The Works of Aristotle*, ed. and transl. by W.D. Ross (Oxford University Press, 1910-49). This section includes a discussion on the "homeomerous" and the "anhomeomerous" parts.

al-Manṣūrī, is almost identical),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-Nafīs two hundred years later, and which earned him the enthusiastic description of "the discoverer of the pulmonary circulation" by certain modern writers.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, *On the Usefulness of the Parts of the Body*.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-Masīhī's contemporary in Spain, Abū'l-Qāsim al-Zahrāwī, also left a long and detailed account of the technique of venesection and its indications.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.

33. For comparison, see Galen's description of the heart in his *On Anatomical Procedures*, transl. C. Singer, Wellcome Historical Museum Publications, (Oxford University Press, 1956), VII, 175; 179-188. The anatomy of the heart is given in *maqāla I* of the *K. al-Manṣūrī*, "On the form and appearance of organs".

34. See M. Meyerhof, "Ibn al-Nafīs (XIIIth century) and His Theory of the Lesser Circulation", *Isis*, 23 (1935), 100-20.

35. Transl. by M. T. May, Cornell University Press, 1968.

36. *Albucasis on Surgical Instruments*, ed. and transl. by M. S. Spink and G. L. Lewis, (London, Wellcome Institute for the History of Medicine Publications, 1973), pp. 624-655 (on veins), and pp. 174-183 (on arteries).

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", (*mujarrabāt*), but stresses that where possible, only one drug should be used at a time. These *mujarrabāt* are of some interest; many books were devoted to this subject during the Arabic period, including those by al-Kindī, al-Rāzī, Ibn Sīnā, Ibn Zuhr, Ibn al-Tilmidh and many others. Sarton³⁷ was very impressed with the tradition of *mujarrabāt*, and held that it represented the earliest example of an experimental method in medicine. But in fact, the *mujarrabāt* were nothing to do with the experimental method but were rather medicines which had been found to work by experience.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, 1.6 - 1.8)

أفيون بارد في الرابعة يابس في الثانية ينفع من الاورام الحارة الملتهبة خاصة من العين مجلب للسبات مخدر للحس قليله ينفع في تسكين الالوجاع والتنويم وكثيره يقتل.

"Opium is cold in the fourth (degree), dry in the second; efficacious in hot, inflamed swellings, especially of the eye; causative of lethargy; anaesthetic; a small amount of it is efficacious in stilling pain and for narcosis; a great deal of it kills."

This system of degree classification was a refinement of the Galenic arrangement whereby drugs were graded according to their qualities and their efficacy.³⁹ The Arabic physicians broadened and expanded Galen's ideas into a neat and well-ordered system.⁴⁰ Parts of animals are also included here as substances with medicinal properties, as for example with the livers of certain animals, which are used as sympathetic medicines in diseases of the liver. The gall, tongues, and secretions of animals, such as their saliva, milk,

37. Sarton, *op. cit.*, II, 94.

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

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

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-Masīhī explains something of the nature of all diseases:

(f. 164b, 1.15 – 1.20)

وإن الأمراض واسبابها واعراضها كلها امور خارجة عن الطبع وغرض صناعة الطب هو ازالها كلها على القصد الأول فان الذي يقصد إلى ازالته أولا هو المرض لأنه هو الذي يضر بالفعل إلا أنه لا يزول الا بزوال السبب الذي احده

"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 it 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 these in this way:

(f. 167b, 1.15 – f. 168a, 1.1)

واسباب الامراض ثلاثة اجناس احدها جنس الاسباب البادئة والثاني جنس الاسباب السابقة والثالث جنس الاسباب الواصلة والاسباب البادئة هي التي تؤثر في البدن وهي خارجة عنه مثل حرارة الشمس القوية التي تولد الحمى واما الاسباب التي تؤثر في البدن من داخل فما كان بينه وبين المرض سبب آخر فهو سبب سابق وما كان منها ليس بينه وبين المرض سبب آخر فهو سبب واصل.

"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)

فمما كانت في الارواح كانت حمى يوم وهي تنقضي اما في يوم واحد وإما في نوبة واحدة إن بقيت أكثر من يوم واحد ومما كانت في الاخلاط كانت حمى العفوية وحمى العفوية منها دائمة وهي التي مادتها محصورة في العروق ومنها ذات افتراق ونوايب وهي التي مادتها خارجة عن العروق ومما كانت في الاعضاء كانت حمى الدق.

"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 vein. 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-firāsa*), 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 Hunayn b. 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 Orientale*, II, (Berlin, Akademie-Verlag, 1969).

42. Notably, the book on physiognomy of the Greek sophist, Polemo, which survives only in Arabic translation as *K. Iflāmūn fī'l-firāsa*. 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)

فصارت الرئة تنبسط وتقبض بانبساط الصدر وانقباضه ومضى انبسط امتلأت تجاديفها هواء ومضى انقبضت اندفع الى خارج ما اندفع اليها من دخان القلب فالتنفس هو سبب حصول الهواء للقلب الذي به يتروح اولا وتبقى حرارته معتدلة نقية وتكون منه الروح الحيواني الذي بتوسطه تصل قوة الحياة والحرارة الغريزية الى جميع البدن .

"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".

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 faeces, 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-Masīhī 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 prognostic

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., I, 316.

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 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 *kunnāshāt*, and was also treated as a separate subject, as the many Arabic tracts on hygiene testify.⁴⁴ 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)

فالطبيب فاعل كالمعين للطبيعة بأن يقرب منها الدواء وغيره من داخل أو خارج على ما ينبغي في الوقت والمقدار فهو يحصر بمحصلها ما تقوى به فتستعين به في دفع المرض ولذلك صارت الطبيعة قد تدفع وتزيل كثيرا من الامراض من دون دواء أو طبيب وليس يقدر الدواء ولا الطبيب إزالة المرض البتة متى خارت القوة وعجزت .

"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 repulses 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".

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-toe 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.

44. Qusṭā b. Lūqā, Ishāq b. Imrān, Ibn Sīnā, Ibn al-Muṭrān, 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-Masīhī'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 مخصوصة بالدماغ ويكون من مشاركة المعدة وبعض الاطراف كالرجل او اليد او مشاركة الرحم للنساء بأن يصعد من كل واحد من هذه الاعضاء ما يسد منافذ بطون الدماغ فيحدث الصرع فان كان يصعد من بعض الاطراف فينبغي في وقت النوبة قبل ظهورها أن يشد فوق ذلك الموضع برباط شدا محكما الى أن تنقطع النوبة ثم يطل الموضع بالفلفل والخردل والفرقيون وعسل البلادر ويترك حتى يتنفط .

"(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".⁴⁵ 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 dyeing 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 dyeing 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 theriac, since theriacs were originally made up as antidotes, and it was only later that their use became widespread as universal panaceas.⁴⁶ The book does not deal with the bites of large animals, such as lions,

45. In Arabic literature, this phrase includes a number of related topics: the place of coitus in health; disorders associated with the performance of coitus such as impotence and priapism; gonorrhoea and nocturnal emission. The remedies in such sections often included numerous aphrodisiacs. Some books added chapters with a strongly erotic flavour on such subjects as ways of increasing sexual pleasure and sexual positions.

46. The theriacs were a group of compound medicines said to have been devised by the Greek physician, Andromachus, as antidotes against poisons of all types. By Galen's time, they were in use for other conditions as well, and later still, they became universal panaceas. See G. Watson, *Theriac and Mithridatum* (London, the Wellcome Historical Medical Library, 1966).

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'a* 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.⁴⁷ 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'a* as a model for Ibn Sīnā'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'a*. Furthermore, al-Masīhī'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-Masīhī'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'a* 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

47. Such quotations have been of the greatest value to modern scholarship. For example, Ibn al-Jazzār's book, *Zād al-Musāfir*, provided Daremberg during the last century with important fragments of Rufus' medical writings which he incorporated into his *Oeuvres de Rufus d'Ephèse* (ed. C. Daremberg and E. Ruelle, Paris, 1879). 'Alī b. Rabban al-Ṭabarī's *Firdaws al-ḥikma* (ed. by M. Z. Siddiqī, Berlin, 1928) contains a rich variety of quotations from Greek, Arabic, and Indian sources. Pseudo-Thābit's *K. al-Dhakhira fī 'ilm al-ṭibb*, (ed. by G. Sobhy, Cairo, Government Press, 1928), also transmits many quotations from others.

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'a* was not available in Spain. In fact, as was noted earlier none of al-Masīhī'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 'Alī b. al-'Abbās al-Majūsī's *kunnāsh*, *Kāmil al-ṣinā'a* have been translated into Latin and not *K. al-Mi'a*?⁴⁸ 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'a*, 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'a* is mainly devoted to theory, as has been shown above. This is in line with al-Masīhī's purpose in writing the book, for he says in his introduction:

فاقتضى هذا العلم بحسب ما هو موجود عليه في نفسه اما في جملة فانه يرتب ويسهل ويلخص واما في الجزء النظري منه فانه يتم ويصحح واما في العلاجات فانه يختصر ويقرب فقامت هذه الشرائط كلها وبذات الوسع والطاقة فيها فخرج أصح وأتم وأسهل وأصغر 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 التصنيف وفي صناعة الطب والجزء العلاجي منه زائد على المقدار الواجب بإفراط والجزء العملي قلل عن الواجب .

48. 'Alī b. al-'Abbās al-Majūsī lived and worked during the reign of the Persian ruler, 'Aḍud al-Dawla (949-982). Very little is known of his life (see IAU, I, 236; al-Qiftī, *op. cit.*, p. 232; GAL, I, 237; SI, 423). His book, *Kāmil al-ṣinā'a*, also known as *al-Kitāb al-Malakī* (because it was dedicated to 'Aḍud al-Dawla), was translated into Latin by Constantine the African as *Liber Pantegni* 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. Schipperges, *Die Assimilation der arabischen Medizin durch des lateinische Mittelalter*, *Sudhoffs Archiv*, Beihefte, 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-Majūsī's book. And hence, it never diffused to the West like the other book. The same fate seems to have befallen another *kunnāsh* written within 50 years of *K. al-Mi'a* and contemporary with al-Majūsī's book, perhaps for the same reason. *Al-Mu'ālajāt al-buqrāṭiyya* is a large system of medicine in 10 *maqālāt* compiled by Abū'l-Ḥasan Aḥmad al-Ṭabari,⁴⁹ 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 book⁵⁰ 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,⁵¹ and some of its sections on diseases of the skin were translated into German by Mohammed Rihab.⁵² Otherwise, it has remained relatively unknown.

Despite these considerations, the question with regard to al-Masīhī'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-Majūsī's *Kāmil al-ṣinā'a* and of the same calibre as Ibn Sīnā's *Canon*.

49. Some meagre facts about al-Ṭabari's life are to be found in IAU, I, 321. See also GAL I, 237; SI, 422.

50. There is a complete manuscript of this work in the Bodleian Library, Oxford, Marsh 158.

51. J. Hirschberg, *Geschichte der Augenheilkunde bei den Arabern* (Leipzig, 1908), pp. 107-114.

52. Mohammed Rihab, "Der arabische Arzt al-Ṭabari. Übersetzung einzelner Abschnitte aus seinen 'Hippokratischen Behandlungen'" *Sudhoffs Archiv*, 19 (1927), 123-168.

Notice of an Important al-Jazarī Manuscript

DONALD HILL*

This notice refers to a manuscript of al-Jazarī'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. 1, 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 *naskhī* script with 21 lines to the page. The colophon on page 207a (Persian pagination – see below) gives the name of the scribe as Farkh ibn 'Abd al-Laṭīf 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.