THE COMPILATION OF PHARMACOLOGICAL IDEAS DURING THE ABBĀSID CALIPHATE WITH SPECIAL REFERENCE TO A SECTION OF AL-ḤĀWĪ OF AL-RĀZĪ

Mohamad bin Taha

A Thesis Submitted for the Degree of MPhil
at the
University of St Andrews

1988

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by

MOHAMAD BIN TAHA

St. Andrews March 1988.

UNIVERSITY OF ST. ANDREWS

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ACKNOWLEDGEMENTS

I am happy to express first my gratitute to my supervisor, Dr.D.E.P. Jackson, a member of the staff of the Department of Arabic Studies of the University of St.Andrews, to whom I am much indebted. He has rendered me advice, support and encouragement, and has supplied me with valuable material for this thesis. Also, I wish to thank Dr.M.Y.I.H. Suleiman who supervised me with generous interest between 15th January 1987 and 28th October 1987, that is during the absence of Dr. D.E.P. Jackson. I should also like to thank the Department of Arabic Studies and its staff under the head of the department Dr.Burton, and the University of St.Andrews and its library officials, where this research has been carried out, and various libraries throughout the United Kingdom and the librarians for their generous assistance in the hunt for necessary materials. Also, I would here like to express my special indebtedness to the National University of Malaysia and the Public Services Department of Malaysia and its representative in London, Malaysian Students Department, who have sponsored this research.

Mohamad Taha

St.Andrews
March 1988

ABSTRACT

This is a study of the transmission of medical ideas of the ancient world into Arabian medicine. It is concerned with pharmacological ideas in particular, with special reference to *al-Ḥāwī* (Liber Continens) of al-Rāzī (Rhazes).

The First Part of this thesis outlines the medical knowledge of the ancient Mesopotamians (Sumerians, Babylonians and Assyrians), Egyptians, Indians, Persians and Greeks, and the exchanges in the kowledge between them.

The Second Part is a view of the translation efforts during the period of the early ʿAbbasid Caliphate, as most foreign medical works were translated during this period by the most celebrated and competent translators in the Arabian world. This part also includes a list of some of the medical works which were translated into Arabic, giving some view of how they were transmitted and came down to the Muslims.

The Third Part gives a view of the life of al-Rāzī and the significance of his work in brief. Then it deals with his *al-Ḥāwī*, an original work written at the end of the ninth century or early tenth century A.D., that is after the translation effort had culminated, showing the kind of impact this movement had on the medical works of Muslims. Then this part examines a section consisting of two chapters of volume I of *al-Ḥāwī*: it examines some foreign influences, especially on drugs. This is followed by the translation of this reference text and the conclusion

TRANSLITERATION SYSTEM OF ARABIC TEXTS

Consonants

Arabic	Symbol	Arabic	Symbol	Arabic	Symbol
ء	'	ز	z	ق	q
ب	b	س	s	ك	k
ت	t	ش	sh	ل	l
ث	th	ص	ṣ	م	m
ج	j	ض	ḍ	ن	n
ح	ḥ	ط	ṭ	هـ	h
خ	kh	ظ	ẓ	و	w
د	d	ع	ʿ	ى	y
ذ	dh	غ	gh		
ر	r	ف	f		

Vowels and Diphthongs

Long Vowels		Short Vowels		Diphthongs	
ـَا	ā	ـَ	a	ـَوْ	au
ـُو	ū	ـُ	u	ـَيْ	ai
ـِى	ī	ـِ	i		

TABLE OF CONTENTS

PART I

INTRODUCTION: HISTORY OF PHARMACOLOGY

The history of ancient pharmacology as it was inherited by the Arabs is best approached by the provision of a summary of development on a geographical or area basis. The areas which are here covered are Mesopotamia, Egypt, India, Greece, and Persia. This is followed by a summary of the exchanges in medical knowledge between the areas.

Mesopotamia

The medical history of Mesopotamia began with its early inhabitants, the Sumerians, about 4000 BC. Sometime in the third millennium BC the Babylonians, who spoke Akkadian, conquered the Sumerians. The Assyrians then took complete supremacy over Babylonian Mesopotamia from 1270 down to 538 BC, so that they inherited the civilization of their predecessors. (Elgood, 1951: 3-4; Trease, 1964: 6; Levey, 1973: 2)*[1].

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*1. For bibliographical details of these and subsequent references, see Bibliography pp. 177-184, under author.

Thousands of Mesopotamian clay tablets, written in a system of cuneiform, are among the earliest literature relating to pharmacology. The tablets bear out that many vegetables, minerals, alcoholic beverages, fats and oils, parts of animals, honey, wax, various milks and botanical drugs, including hellebore, myrrh, asafoetida, liquorice, colocynth, opium, cannabis, thyme, etc., were being used medicinally in this time. Beer was apparently the most common vehicle for drugs to be administered orally. Many of the minerals mentioned by Dioscorides in his ***Materia Medica*** had already been used. Salt was applied as an antiseptic and potassium nitrate as an astringent. The forms in which they prepared drugs for administration were medicated wines, ointments, embrocations, cataplasms, enemas, poultices, plasters, lotions, infusions, decoctions and fumigations. (Renaud and Colin, 1934; *passim*; Sonnedecker, 1976; 4-5; Levey, 1966; 225-345).

Those prescriptions also show that they frequently used revolting material. They believed that such medicine would disgust the evil spirit, which was said to cause a disease, so that it would quit the diseased part. In their view, the more serious the disease the more nauseating should the preparation be. (Elgood, 1951;4-5).

Egypt

In the third millennium BC the ancient Egyptians were supposed to have been acquainted with medical knowledge. There were many physicians during this time. Among the earliest evidence of medical practice in Egypt are the well-splinted fractures of some mummies of ca.2750 BC, a tomb inscription referring to a physician and his medicine chest ca. 2600 BC, pictures of surgical operations carved on the doorposts of a tomb ca.2500 BC, and the medicine chest of an Egyptian queen ca.2500 which contains vases, spoons and dried drugs. (Trease, 1964; 4-5).

However, the most clear information about the medical practice of ancient Egypt can be obtained from medical papyri, works which were written with ink on payrus between ca.1900-1100 BC. Among them, the Ebers Papyrus (bearing the name of a German Egyptologist, George Ebers) of ca.1550 BC, and the Edwin Smith Papyrus of ca.1600 BC, are the main sources of the knowledge of Materia Medica of this country. The Ebers Papyrus alone embraces more than 700 drugs, in 875 formulae or recipes. (Trease, 1964; 5; Sonnedecker, 1976; 7-9).

In crude form, the ancient Egyptians apparently knew most of our modes of administration of drugs such as

gargles, snuffs, inhalations, suppositories, fumigations, enemas, poultices, decoctions, infusions, pills, troches, lotions, ointments and plasters. The drugs were drawn from the plant, the animal and the mineral kingdoms, but botanic drugs predominate for internal use - such as acacia, wormwood, date, fennel, fig, garlic and poppy seeds. Mineral substances such as alum, iron oxide, limestone, sodium carbonate, salt and sulphur were used. Like the Mesopotamians, excreta of various animals were used occasionally. Beer, milk, wine and honey were popular vehicles for drugs. Honey and wax were often used as binding agents in the formulae. Mortars, hand mills, sieves and balances were commonly used in technological operations such as pharmaceutical compounding. (Sonnedecker, 1976; 9).

It is said that there were not many medicinal plants native to ancient Egypt. But, Dioscorides mentions 80 vegetable drugs which are original to Egypt. Therefore, it is considered that the ancient Egyptians cultivated many plants originally not native to their country and used them medicinally. For example, pomegranate was not indigenous to Egypt but must have been cultivated extensively there about 1100 BC. (*Ibid*).

India

Although Indian medicine is supposed to have had its beginnings between 2500 and 1500 BC, we have not much information of medical activities of this period, down to the sixth century BC, when the earliest medical schools of Dhanvantari and of Ātreya were founded (see Hoernle, part I, 1907; *in introduction iv*; Sarton, vol.I, 1927; 76; Bhishagratna, vol.I, 1963; *in introduction* x; Levey, 1973; 11).

The *Saṃhitā*[1] of Suśruta,[2] a disciple of Dhanvantari, the first-propounder of medical science of India (Bhishagratna, *Ibid.*), is one of the oldest Indian medical works in existence. In this work drugs are classified according to taste and therapeutic properties. Drugs are obtained from animals, minerals and plants. Among animal products are ghee, lard and marrow. Milk, honey and cow's urine are popularly used as excipients, or as binding agents.

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1. See p. 39 no. 5.

*2. For brief information of this and subsequent persons, see Biographical Index pp.167-176 (under personal names).

For jaundice and abdominal dropsy (Sanskrit: *Udara*), for example, cow's urine is given together with pepper (*pippali*) to be drunk every morning before sunrise (*Ibid*,vol,II; 523). Other plant products, which are noted as being about 760 in number (Sarton, vol,I, 1927; 77), are turmeric, saffron, tree sweet rush, sesamum, rice and others ~~others~~ whose Indian names are difficult to translate. The application of various types of salt, such as rock-salt, medicated salt called *Kánda-Lavana* or *Sneha-Lavana* is also mentioned in this book. The drugs are purifying, purgative, emetic, tonic, aphrodisiac, antidotes, etc. Various modes of administration are also presented. For nervous disorders, fomentation, anointment, massage, plaster, poultice, cauterization, gargling, etc. are administered. Sometimes purification and diet is prescribed. For example, to improve the memory, a person is thorouglly cleansed with emetics, purgatives, etc., which are drunk with hot water, and then he is accommodated in a room and prescribed a special regimen with milk . (Bhishagratna, vol,II, 1963; 522 & *passim*).

Another work is *Caraka-Saṃhitā*[1], which represents Ātreya's system of medicine (Sarton, vol.I, 1927; 284). According to this work, drugs differ with respect to land, season, source, flavour, taste, potency, post digestive effect and specification. Then it describes 600 purgative preparations. Remedies such as long pepper, myrobalan and honey are universally used (Levey, 1973; 13-15).

Many medical writings followed the works of Charaka and Suśrutā. One such work was Shānāq's *Kitāb al-Sumūm*[2] (Book of Poisons), which contains some substances from Greek sources and prescriptions from older Indian treatises (*Ibid*, 16).

The Ancient Indians were expert in poisonous drugs, and the Arabs took much information from them in this field. In his campaigns in India Alexander lost a great number of soldiers as a result of poisons which the Indians employed. Ptolemy, his general, was wounded by a spear dipped in serpent's venom and came near to death. He was said to be saved by Alexander who knew an antidote for the poison. Alexander may have acquired this knowledge from Indian doctors (Elgood, 1951; 29).

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1. See p. 39 no. 4 .
2. See p. 49 no. 11.

The disease which caused the death of Alexander was attributed to a 'poison-maiden' whom he received from an Indian king as a gift. This is what Aristotle warned Alexander about when he said, "Remember what happened when the king of India sent thee rich gifts, and among them that beautiful maiden whom they had fed on poison until she was of the nature of a snake". When the Indian kings want to conquer an enemy ruler, they take a new-born girl and strew a plant called *al-bish* first for some time under her cradle, then under her mattress, and then under her clothes. Finally they give it to her to drink in her milk until the growing girl begins to eat it without hurt. Then she will be sent with presents to the king whom they wish to destroy. When this king has intercourse with her, he will die (Elgood, 1951; 31).

Greece

The discussion may be started with Hippocrates (ca.460-370), "the father of medicine", who was responsible for placing medicine on a scientific basis, as before him medicine was practised as a magical art. Among his teachings which have had a great influence upon pharmacological ideas is that "the first requirement of medical treatment has to be the purification of the body from illness-producing excess

of humours". Based on this theory, purgatives, sudorifics, emetics and enemas were frequently used by his successors (Sonnedecker, 1976: 15-16).

Before, during and after the time of Hippocrates, there was a group of experts in medicinal plants, called *rhizotomoi*. These erudite pharmacobotanists collected the indigenous vegetable roots and sold them, and they themselves often practised medicine. The most important of them was Diocles of Carystos (4th century BC). His ριζοτομικόν, a book of medical botany, is the oldest known botanical work (only fragments of this work have survived). He is considered to be the source for all Greek pharmacotherapeutic treatises between the time of Theophrastus and Dioscorides. (Sarton, vol.I, 1927: 121; Trease, 1964: 7; Sonnedecker, 1976: 17).

Theophrastus of Eressos (370-285 BC), a pupil of Plato and Aristotle, was one of the most celebrated Greek botanists. His works were derived partly from original observations, partly from other observers, such as Diocles, and partly from those who followed Alexander's armies to the East.

One of his works which is preserved is περὶ φυτῶν ἱστορίας (Enquiry into Plants), which deals with the collection and preparation of vegetable drugs, foodstuffs, perfumes, plant diseases and weather signs. (Sarton, vol.I, 127; 143 & 121; Trease, *Ibid.*; Sonnedecker *Ibid.*).

Fragments of their works have been transmitted to us mainly through the *Materia Medica*[1] of Dioscorides and works of Galen.

Dioscorides wrote the *Materia Medica* around 78 AD after he travelled through Asia Minor, Italy, Greece, Gaul and Spain. He describes the drugs of his time, explains their effect and arranges his description systematically. The contents of the five books are arranged as follows:

i. Book I: aromatics, oils, ointments, trees.

ii. Book II: animal products, cereals and sharp herbs.

iii. Book III: roots, juices, herbs.

iv. Book IV: drugs useful for poisons.

v. Book V: wines, minerals and stones.

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1. See p. 38.

It is mentioned by many writers as being the most influential pharmacological work ever produced (see Meyerhof, 1944(a); 1845-7; Sonnedecker, 1976; 17-18; Levey, 1973; 21; Ullmann, 1978; 103).

The *Materia Medica* was referred to by Galen (130-201 AD), who also carried out his own investigations and wrote books on simples, on compounded remedies and on antidotes and theriacs[1] (Meyerhof, 1944(a); 1847 and 1854; Ullmann, 1978; 103).

Among Galen's important practices is his effort to test the action of drugs according to the theory of the four humours[2].

1- See p. 33 n.7; p.34 n.10 & 11; p. 35 n.14,15,16 & 17.
2- The humoural doctrine was an ancient concept which explains that the four body humours, blood, yellow bile, black bile and phlegm, determine the bodily state in health or disease. They are associated with the four elements, fire, air, earth and water. These elements correspond each to a pair of qualities, hot, cold, dry and moist: blood is hot and dry (since it was thought to be compounded largely of fire which possesses these qualities); yellow bile is hot and moist (air); black bile is cold and dry (earth); and phlegm is cold and moist (water). A proper and evenly balanced mixture of the humours produce a healthy body and mind, while an imperfect balance results in disease. The same applies

This idea is illustrated as follows: "Supposing that the patient suffered from a disease where the affected part was ten units warmer than normal and seven units drier, the remedy had to be ten units colder than normal and seven units moister, provided that the diseased part was located superficially. If it was situated more deeply, an adjustment had to be made, lest the remedy lose its power before reaching the diseased part". (Sonnedecker, 1976: 19)[1].

Many of his preparations became popular. One of the most famous remedies that gained a wide reputation because of his recommendation, although in use before his time, was *hiera picra* ('holy bitter') (Sonnedecker 1976: 20), as can be seen later .

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to temperament, that is to say, a proportionate blending (eucrasia) of the four qualities (hot, cold, dry and moist) produces a normal activity; a disproportionate blend (dyscrasia) causes abnormal activity. (Taylor, *Stedman's Medical Dictionary*; Brock, 1928: 189).

1- This illustration is quoted by Sonnedecker from O.Temkin in his book *Galenism, Rise and Decline of a Medical Philosophy*, Ithaca and London, 1973, p.112, based on Galen's *Ars medica* 28 (Kühn edition 1:388 f.).

Those works of Dioscorides and Galen were repeatedly summarized by later physicians such as Oribasius (4th cen), Aëtius of Amida (502-575), Alexander of Tralles (525-605), and Paul of Aegina (7th cen). Their pharmaceutical knowledge is based upon that of their predecessors, but in their works we already find a number of drugs that do not occur in the writings of Dioscorides and Galen, for instance, camphor, zedoary root, bark of the pomegranate root, anacardia, sandalwood, coconut, fluid styrax, cloves, mastix and others. (Meyerhof, 1944(a); 1847-8).

Paulus Aegineta (7th cent.), the last of the Greek compilers, may be mentioned here. He wrote a medical encyclopedia in seven books[1]. The seventh book is occupied by drugs which are arranged alphabetically together with their properties and uses. Paulus refers to his predecessors, mainly Dioscorides, Galen and Oribasius. (see Adams, vol.III, 1847; *passim*).

1- See page 38

Persia

Evidence for medical activity among the ancient Persians is found in the *Avesta*, which consists of the *Yasna*, the *Yashts*, the *Vendidad* and the *Bundahishn*, and which is the earliest ancient Persian medical work which survives. Its author, Zoroaster, or Zarathustra, was born sometime in either the seventh or the eleventh century BC. The Persians may have had medical knowledge before this time. This they either adopted from their neighbours in Mesopotamia (Elgood, 1951: 5; Sigerist, 1961: 202-6), or established themselves.

The largest medical training centres were probably Rayy, Hamadan and Persepolis. Three kinds of practitioner issued from the schools, viz. 'healers with the holy word, healers with herbs (the *Athravans* or protectors of the Fire) and healers with the knife'. (Elgood, 1951: 12; Sigerist, *Ibid.*).

Pharmacobotanists were apparently in high esteem in the society. A person from the agricultural class, if especially experienced in the medicinal qualities of herbs and plants, might rise above his birth and enter the ranks of the medical profession which was controlled by priests, a group of the highest class in the ancient Iranian society (Elgood, 1951: 11-12).

Among the remedies mentioned in the Avesta is *madhu*, a sweet mild wine, which is given to a woman after a delivery. In a case of miscarriage *gomez* (cow's urine) is prescribed, both taken orally and as a douche "to wash over the grave in the womb". *Gomez* is also used to disinfect the clothes of a person who has died, to cleanse garments which have been contaminated by vomitus or blood, etc. Other drugs are *shaeta* (gold or possibly some yellow plant or liquid), *ghana* ('that which kills'), and *fraspata* ('that which expels the fruit so that it perishes'), none of which can be identified with certainty (*Ibid*, 8 & 15).

Exchanges of medical knowledge in ancient times

The exchange of medical ideas may clearly be understood from the history of Persia, in which the Achaemenian dynasty (ca. 650-331 BC) and the Sāsānian dynasty (226-651 AD) played the major part.

A direct contact between Mesopotamia and Persia happened when the Assyrians, who had invaded Egypt in the seventh century BC (Trease, 1964: 6), were conquered by the Persians in 538 BC. However, before this time the Persians were supposed to have had a contact with the early Mesopotamians who lived in Iraq and the Persian

foothills. The influence of Mesopotamian medicine can be traced in the *Avesta*. (Elgood, 1951; 3 & 5).

In 525 BC Darius, the ninth Achaemenian king, defeated Egypt. He took a great interest in Egyptian medicine and chose Egyptians as his medical advisers, as had done the second king Cyrus the Great. (*Ibid*,21-2).

Egyptian medicine lost its influence when Greek medicine rose to prominence. Darius' successful campaigns against Scythia, Thrace and Macedonia in 512 BC introduced Greek medicine into Persia. The Egyptian physicians were replaced with the Greek Democedes, the Crotoniat, as Darius' new doctor, after he cured the monarch by using the remedies customary among the Greeks (*Ibid*, 22-3). Another Greek doctor was Ctesias, the son of Ctesiochus, who was taken prisoner during the fighting between the Greeks and the Persians in 417 BC, and was appointed a court physician of Artaxerxes II, an Achaemenian king (*Ibid*, 22-6). He was also said to have visited, or resided in, Northern India (Hoernle, Part I, 1907; *in Introduction* iii).

The Greek-Achaemenian wars continued until 331 BC when Alexander the Great, who had already subdued Greece, Egypt and Asia Minor, defeated Darius Codomanus (338-331 BC), the last Achaemenian king. Thus, Alexander,

who made Greek the official language of his empire, was responsible for the penetration of the western civilization into central Asia (*Ibid*, 27-33).

However, the most significant events happened during the period of the Sāsānians. Under the reign of Ardashīr b Bābak (226-241 AD), the founder of the Sāsānian Empire, some Greek works were purchased. The effort was carried on by his son, Shāpūr I (241-272 AD), who collected Greek medical manuscripts from the Byzantine Empire and other regions, brought back Roman scholars as prisoners[1] and built Jundīshāpūr in 260 AD. The process continued under Anūshirwān Kisrā I (531-578 AD), who was interested in collecting and editing ancient manuscripts (Ibn al-Nadīm, 1929; 333-4; Ullmann, 1978; 16-17).

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1. This probably happened after his victory over Emperor Valerian in the year 260 AD (Ullmann, 1978; 16-17).

Furthermore, in the 5th and 6th century, Jundīshāpūr was attended by Nestorians[1], exiled adherents of Jacob Baradaios[2] and Athenian scholars[3], who brought together the Greek sciences. (Meyerhoff, 1944a: 1848-9; Marti-Ibanez, 1961: 111; Brody, 1955: 29-31).

The Sāsānians also made contact with the Indians. This is illustrated by the effort of Ardashīr who sent his men to India to obtain manuscripts (Ibn al-Nadīm, 1929: 333). Moreover, 'Anūshirwān Kisrā I sent his physician, Burzūyah, to India to obtain scientific, particularly medical, works for translation. Some Indian scholars were also supposed to have been called to Jundīshāpūr (Meyerhof, 1937: 22).

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1. They were the followers of Nestorius, the Patriarch of Constantinople, whose teachings were anathematized by the General Council of Ephesus in 432 AD (Brody, 1955: 29).

2. He was the founder of the new sect of the Monophysite Jacobites in the 6th century. His men were exiled from the Byzantine Empire. (Meyerhof , 1944a: 1848-9).

3. This group of philosophers took refuge in Jundīshāpūr when Justinian ordered the school of Athens to be closed in 529 AD (Meyerhof, 1944a: 1849).

Other centres of contact which may briefly be mentioned were Alexandria and Ḥarrān.

After the victory of Alexander the Great over Egypt, Alexandria became a centre for Greek learning. Among great scholars who flourished here were Sergius of Rêsh ᶜAinâ [Theodosiopolis] (d.536 AD) and Ahrūn (610-664 AD). Many Greek medical works came down to the Arabs through this centre. Syriac was a common language in scholarship. It was here the first translation of Greek medical works into Syriac were done by Sergius of Rêsh ᶜAinâ. (Ibn Abī Uṣaibīᶜah, 1965; 159; Meyerhof, 1926a; 703; Meyerhof, 1944a; 1848-50).

Ḥarrān, the ancient Sabean city in Mesopotamia, became another centre of the Greek civilization. Like in Jundīshāpūr and Alexandria, the scholars here used the Syriac language in their writings (Meyerhof, 1944a; 1852). This centre produced many great scholars like Thābit b. Qurrah, Qusṭā b. Lūqā and others who were among the most well-known transmitters of Greek science into Arabic (Ibn al-Qifṭī, 1903; 75, 115 & 190; Browne, 1921; 27).

The conquest of these centres by the Arabs gave them the opportunity to come into direct contact with ancient science. Baghdad itself not surprisingly inherited a large number of medical works of antiquity from the centres, which were later added to through the further purchasing of such books during the ᶜAbbāsid period.

PART II

THE TRANSLATION EFFORTS IN EARLY ᶜABBĀSID BAGHDAD

Some scholars divide the history of the translation movement of the ᶜAbbāsid Caliphate into three periods (see Rifāᶜī, vol.I, 1928: 379 - 380; Amīn, vol.I, 1956: 277 - 278,):

i. Between the year 136 and 193 AH (753 and 818 AD).
ii. Between the year 198 and 300 AH (813 and 912 AD).
iii. Between the year 300 and 350 AH (912 and 961 AD).

It is generally accepted that the first century of the caliphate, the period between the accession of al-Manṣūr in 754 AD and the death of al-Ma'mūn in 833 AD was the *Golden Age* of Arabic learning. Of the caliphs who reigned through this period, al-Manṣūr, al-Rashīd and al-Ma'mūn were the most significant patrons contributing to the intellectual movement of the day.

Al-Manṣūr (754 - 775 AD)

There is some doubt as to whether the first caliph Abū ᶜAbbās al-Saffāḥ (750 - 754 AD) ever took the initiative, to any great extent, to have scientific materials translated. He spent his five-year reign establishing the new government, facing disillusioned ᶜAlids as well as the replaced Umayyads, and

developing al-Hāshimiyyah, the first new capital for his government, besides founding the apparatus of administration such as the office of *Wazīr* (Hitti, 1951: 288 - 289; Elgood,, 1951; 69). We have no record showing that the Háshimiyyah court was an active centre for any sort of scientific studies. When then did these intellectual efforts take place?

According to some accounts it was begun under the fifth ᶜAbbāsid Caliph al-Rashīd, with encouragement from the wazīr Jaᶜfar the Barmakid. These accounts also mention that Jibrā'īl II (Jibrā'īl b. Bakhtīshūᶜ b. Jibrā'īl b. Bakhtīshūᶜ b. Jūrjis) was responsible for the earliest translation of medical texts. He was also the first of the Bakhtīshūᶜ family to promote the Greek sciences amongst the Arabs (O'Leary, 1948: 159 - 160).

These reports are, however, unlikely to be true. The significant intellectual movement and the translation of scientific materials, particularly in the medical field, had been commenced at the time of al-Manṣūr. A group of intellectuals worked under the caliph. Ibn al-Nadīm (1929: 340) reports:

> Al-Baṭrīq, who lived at the time of al-Manṣūr was asked by him to translate some parts of the ancient books.

ᶜAbd Allāh b. al-Muqaffaᶜ was also prominent at this time. He not only translated Indian books but also actively translated Greek logical and medical texts preserved in Pahlavi into Arabic (Ibn al-Nadīm, 1929: 172, 337; Ibn al-Qifṭī, 1903: 220; Ibn Abī Uṣaibiᶜah, 1965: 413; O'Leary, 1948: 155)[1]. The appearance of such figures indicates that al-Manṣūr's court was a centre of the translation school.

The medical field was given considerable attention by the school during this time. A large number of medical books of Hipporates and Galen were translated by al-Biṭrīq. Before him, similar work was carried out by Jūrjis b. Bakhtīshūᶜ, al-Manṣūr's physician and the first figure who was responsible for bringing Greek medical works from Jundīshāpūr to the ᶜAbbāsid court (Ibn al-Nadīm, 1929: 412 - 413; Ibn al-Qifṭī, 1903: 158; Ibn Abī Uṣaibiᶜah, 1965: 183 - 201 & 282). Ibn Abī ᶜUṣaibīᶜah (1965: 279) remarks;

> And he (Jūrjis) was one of the first people to commence the translation of the medical works into the *Arabic tongue* (Arabic language) when al-Manṣūr asked him to do so.

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1. See also p. 46.

Clearly, this quotation reveals that the translation of medical writings had been begun in the period of the second ᶜAbbāsid caliph al-Mansūr.

Hārūn al-Rashīd (786 - 809 AD)

Hellenistic science was eargerly studied under al-Rashīd's auspices. It is a matter of great significance that ancient Greek manuscripts were purchased from Ammúriyah (Amorium), Anqarah (Ancyra) and other places under Greek rule during al-Rashīd's reign. These and other works were translated by al-Rashīd's men like Yūḥannā b. Māsawaih (Ibn Juljul, 1955; 65; Ibn Abī Uṣaibiᶜah, 1965; 246).

Indian medical art was also promoted during this period. It was at this time, according to the reports of Ibn al-Nadīm (1929; 342 & 421) and Ibn Abī Uṣaibīᶜah (1965; 475), that Indian physicians, such as Mankah, Ibn Dahn, Sāliḥ b. Bahlah, were introduced into the ᶜAbbāsid court. Many Indian medical manuscripts were translated into Arabic directly from India or through Pahlavi . Clearly, Indian medical ideas first entered ᶜAbbāsid work on a large scale during al-Rashīd's era.

In addition, *Bait al-Ḥikmah* was founded by al-Rashīd[1]. Through the encouragement of the Barmakids thousands of Indian, Persian and Greek books were acquired and kept at *Bait al-Ḥikmah*. This institution was not only a centre of translation but also a library (Ibn al-Nadīm, 1929; 154 & 382; Rifāᶜī, vol.I, 1928; 375; Ḥadād, 1936; 14) .

From the above-mentioned evidence, we may conclude that the scholastic achievement under al-Rashīd was as vigorous as that under al-Manṣūr. We may even go further and say that the former's contribution was somewhat greater than that of the latter. This is not surprising considering the fact that al-Manṣūr was primarily concerned with the consolidation of ᶜAbbāsid rule.

Al-Ma'mūn (813-833 AD)

The sciences flourished greatly during al-Ma'mūn's reign. This knowledge-loving caliph assembled experts in geography and astronomy to draw the map of the

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1. On the other hand, some writers believe that it was built by al-Ma'mūn. (see al-Maqrīzī, 1967; 193; Ibn Juljul, 1955; 68; Meyerhof , 1926b; 26; O'Leary, 1948; 166; Brody, 1955; 34).

world, called *al-Ṣūrat al-Ma'mūniyah* (the Ma'múnic Map). Al-Fazārī who was the first figure to use the astrolabe amongst the Arabs, was also prominent during this period. This suggests that astronomy was fairy advanced by this time. The other sciences: geometry, arithmetic, mathematics, physics, botany, zoology, medicine, etc. were also much studied in the time of al-Ma'mūn (Ibn al-Nadīm, 1929; 340 & 381; Rifāᶜī, vol.I, 1928; 376). This strongly indicates that al-Ma'mūn's reign was one of intellectual advancement.

Al-Ma'mūn encouraged translation and the translators. The translators were paid large sums of money and given many presents by members of the ᶜAbbāsid court. Accordingly, the translators of this period became rich (Rifāᶜī, vol.I, 1928; 381; Al-Ziriklī, vol.II, 1954; 325). It is said that Ḥunain b. Isḥāq was paid in gold the weight of the books which he translated into Arabic (Ibn Abī Uṣaibiᶜah, 1965; 260). Although they had been treated in a similar fashion under al-Ma'mūn's predecessors particularly al-Manṣūr and al-Rashīd, and, similarly by his successors such as al-Mutawakkil (*Ibid.*; 183-7, 198-201, 242-3 & 475-7), these scholars were especially appreciated by al-Ma'mūn and at the top of their career.

This intellectual curiosity on the part of al-Ma'mūn led him to procure many important Greek

manuscripts from Asia minor (Amorium, Ancyra and other cities), Byzantium and Alexandria for translation (Meyerhof, 1926b: 26). In this connection Ibn al-Nadīm (1929; 339-340) reports that al-Ma'mūn wrote to the Byzantine Emperor[1], asking his permission to get the prominent ancient scientific materials found in the various parts of the Byzantine Empire. Having been granted permission, the caliph sent a company out including Ḥajjāj b. Maṭar, Yaḥyā b. al-Baṭrīq and Salmā who selected the manuscripts and brought them back with them, and later translated them. Ibn al-Nadīm (*Ibid.*) also reports that these manuscripts included many important medical works.

It is, therefore not surprising that the number of translated works during al-Ma'mūn's reign was larger than that during the reign of any of the preceding caliphs (Rifāᶜī, I, 1928; 376).

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1. He was probably Leo the Armenian (see Hitti, 1951; 310 and Elgood, 1951; 103).

After Al-Ma'mūn

It is said that during al-Mutawakkil's reign (847-861 AD), Ḥunain and his pupils Ḥubaish al-Aʿsam, Isḥāq b. Ḥunain, ʿĪsā b. Yaḥyā b. Ibrāhīm and others produced some of the best works in translation (Ibid, 168-169), for example, Dioscorides' *Materia Medica*, the best transmitted Arabic medical book ever recorded (Ullmann, 1978: 12), was translated at this time.

Some works were translated during the period of the second half of the ninth century AD and afterwards. However, the productivity of these periods was not as high as that during al-Ma'mūn's reign.

Actually, translated works were gradually replaced by original ones. It was during these times that *Firdaus al-Ḥikmah* of ʿAlī Rabban al-Ṭabarī, *al-Jadarī wa al-Haṣbah* of al-Rāzī, *al-Aqrābādhīn* of al-Kindī, *al-Qānūn* of Ibn Sīnā and other original works were produced. Having studied medical texts which had been translated, these figures produced their own books, extracting the ideas of previous physicians besides giving comments and their own theories. In short, the epoch of original contribution replaced that of translation.

Other Patrons

Besides the caliphs, the same interest in translation and scholarly activity was shown by the nobility and rich men. The Barmakid family, for instance, patronised some scholars in various fields of knowledge (Ibn al-Nadīm, 1929: 71, 499 & 500). It was this family who worked hard to develop Greek, Indian and Persian sciences under al-Rashīd. They encouraged the study of Greek sciences and convinced the caliph to send his men out to purchase Greek manuscripts in the Roman Empire and ancient centres like Jundīshāpūr (O'Leary, 1948: 151 & 160), and worked for the caliph in storing up Indian, Persian and Greek books in *Bait al-Ḥikmah* (Rifāᶜī, I, 1928: 375). They were also responsible for bringing Indian doctors to Baghdad and commissioned them to translate some Indian medical texts, like *Suśruta-Saṃhitā*, into Persian and Arabic (Ibn al-Nadīm, 1929: 342 & 421; Ibn Abī Uṣaibiᶜah, 1965: 475; Ullmann, 1978: 20; Reddy, 1959: 27).

Similarly, the Banū Mūsā b. Shākir al-Munajjim, Muḥammad, Aḥmad and al-Ḥasan, spent about 500 *dinars* per month on endowing a group of translators including Ḥunain b. Isḥāq, Ḥubaish b. al-Ḥasan and Thābit b. Qurrah. Most of the books translated by Ḥunain were dedicated to them. Many of these translated books were medical. Moreover, the brothers also sent their own

men out to Byzantine to obtain manuscripts (Ibn al-Nadīm, 1929; 339-340, 378-379 & 409; Ibn Abī Uṣaibiʿah, 1965; 260 & 283).

There were many more groups and individuals like the Bakhtīshūʿ family (Ibn Abī Uṣaibīʿah, 1965; 201), Muḥammad b. ʿAbd al-Malik al-Zayyāt, ʿAlī b. ʿĪsā, Qāsim b. ʿUbaid Allāh, (Ibn al-Nadīm, 1929; 404, 414 & 415), and others who gave much worthy support to the movement of translating and compiling medical works.

Translation Works

Greek

The Arabs received a large number of Greek medical works. Details of these are available through consultation of a variety of sources. The following list however gives some indication of the nature of the works translated relating to medical science.

(i). **Works by Hippocrates** - These works reached the Muslim world together with Galen's commentaries (See Ibn al-Nadīm, 1929; 401-2):

1. كتاب الفصول (the Book of Aphorisms). This work was translated by Ḥunain b. Isḥāq for Muḥammad b.

Mūsā. The Greek title is ἀφορισμοί (Ibn Al-Nadīm, 1929: 401; Ibn Abī Uṣaibiʿah, 1965: 54; Ibn al-Qifṭī, 1903: 49; Ḥājjī Khalīfah, vol.IV, 1845: 436; Jones, vol.IV, 1931: 97; Sezgin, vol.III, 1970: 28; Ritter and Walzer, 1934: 804).

2. كتاب تقدمة المعرفة (the Book of Prognosis). The original work was translated by Ḥunain b. Isḥāq, and Galen's commentary by ʿĪsā b. Yaḥyā. The Greek is προγνωστικόν (Ibn Al-Nadīm, 1929: 401; Ibn Abī Uṣaibiʿah, 1965: 54; Jones, vol.II, 1923: 1; Nutton, 1979; Ritter and Walzer, 1934: 804; Sezgin, vol.III, 1970: 32; Sarton, vol.I, 1927: 98).

3. كتاب الامراض الحادة (the Book of Acute Diseases). Its original title is περὶ διαίτης ὀξέων. It was originally three sections, but reached the Arabs together with Galen's commentary, consisting of five sections. It was translated by Ḥunain b. Isḥāq and ʿĪsā b Yaḥyā (Ibn al-Nadīm, 1929: 401; Ibn Abī Uṣaybiʿah, 1965: 54; Ibn al-Qifṭī, 1903: 94; Hajjī Khalīfah, vol. V, 1850: 51; Lyons, 1966: in Introduction xi-xii; Lyons, 1969; Ritter and Walzer, 1934: 804; Sezgin, vol.III, 1970: 33; Sarton, vol.I, 1927: 98).

4. كتاب الكسر (the Book of Fracture). It was translated by Ḥunain b. Isḥāq for Muḥammad b. Mūsā. The Greek title is περὶ ἀγμῶν (Ibn Al-Nadīm, 1929: 401; Ibn Abī Uṣaibiʿah, 1965: 55; Ibn al-Qifṭī, 1903: 94; Withington, vol.III, 1927: 95).

5. كتاب ابيديميا (the Book of Epidemics). Ibn al-Nadīm (1929, 401) reports, "The Book of *Epidemics*:

Galen commented on it, the first in three sections, the second in three sections, the third in six sections. The fourth, fifth and seventh were not commented on by Galen, whereas he commented on the sixth in eight sections. They were translated into Arabic by ʿĪsā b. Yaḥyā (see also Ibn al-Qifṭī, 1903: 94; Ḥājjī Khalīfah, vol.V, 1850: 31). However, most writers agree that only *Epidemics* I and III are attributable to Hippocrates. The Greek title is ἐπιδημίαι (See Adams, vol.I, 1849: 339-420; Jones, vol.I, 1923: 139; Ritter and Walzer, 1934: 807; Sezgin, vol.III, 1970: 34; Sarton, vol.I, 1927: 98).

6. كتاب الاخلاط (the Book of Bodily Humours). It was translated by ʿĪsā b. Yaḥyā for Aḥmad b. Mūsā. The Greek title is περὶ χυμῶν (Ibn al-Nadīm, 1929: 401; Ibn al-Qifṭī, 1903: 1903: 94; Ibn Abī Uṣaibiʿah, 1965: 55; Ḥājjī Khalīfah, vol.V, 1850: 36; Ritter and Walzer, 1934: 804; Jones, vol.IV, 1931: 61; Mattock, 1971; Sezgin, vol.III, 1970: 35).

7. كتاب قاطيطريون (the Book of "Medical Treatment"). It was translated by Ḥunain b. Isḥāq for Muḥammad b. Mūsā, or by Ḥubaish b. al-Ḥasan. The Greek title is κατ' ἰητρεῖον (Ibn Al-Nadīm, 1929: 401; Ibn Abī Uṣaibiʿah, 1965: 55; Ibn al-Qifṭī, 1903: 95; Ḥājjī Khalīfah, vol.III, 1842: 5; Lyons, 1943: 5; Ritter and Walzer, 1934: 804; Sezgin, vol.III, 1970: 36).

8. كتاب طبيعة الانسان (the Book of Nature of Man). The original work was translated by Ḥunain b. Isḥāq,

and Galen's commentary by ʿĪsā b. Yaḥyā. The Greek title is περὶ φύσιος ἀνθρώπου (Ibn Al-Nadīm, 1929; 401-2; Ibn Abī Uṣaibiʿah, 1965; 54; Ibn al-Qifṭī, 1903; 95; Ḥājjī Khalīfah, vol.IV, 1845; 155; Mattock & Lyons, 1968; introduction xv-xvi; Jones, vol.IV, 1931; 1; Ritter and Walzer, 1934; 805; Sezgin, vol.III, 1970; 37).

(ii). **Works by Galen:**

1. كتاب الصناعة الطبية (the Book of Medical Art). It was translated by Ḥunain b. Isḥāq. The Greek title is τέχνη ἰατρική (Ibn al-Nadīm, 1929; 403; Ibn Abī Uṣaibiʿah, 1965; 134; Ibn al-Qifṭī, 1903; 129; Ritter and Walzer, 1934; 809; Sarton, vol.I, 1927; 307).

2. كتاب الاسطقصات (the Book of Elements). It was translated by Ḥunain b. Isḥāq. The Greek title is περὶ τῶν καθ' Ἱπποκράτην στοιχείων (Ibn Al-Nadīm, 1929; 403; Ibn Abī Uṣaibiʿah, 1965; 135; Ibn al-Qifṭī, 1903; 129; Ritter and Walzer, 1934; 809; Sarton, vol.I, 1927; 305).

3. كتاب المزاج (the Book of Temperament). It was translated by Ḥunain b Isḥāq. G. Περὶ κράσεων (Ibn Al-Nadīm, 1929; 403; Ibn Abī Uṣaibiʿah, 1965; 135; Ibn al-Qifṭī, 1903; 129; Sarton, I, 1927; 305).

4. كتاب القوى الطبيعية (the Book of Natural Faculties). It was translated by Ḥunain b. Isḥāq. The Greek title is περὶ φυσικῶν δυνάμεων (Ibn Al-Nadīm, 1929; 403; Ibn

Abī Uṣaibiʿah, 1965: 136; Ibn al-Qifṭī, 1903: 129; Ḥājjī Khalīfah, vol.V 1850; Sarton, vol.I, 1927: 306; A.J.Brock, 1928; Ritter and Walzer, 1934: 810).

5. كتاب العلل والاعراض (the Book of Causes and Symptoms). It was translated by Ḥunain b. Isḥāq (Ibn Al-Nadīm, 1929: 403; Ibn Abī Uṣaibiʿah, 1965: 136; Ibn al-Qifṭī, 1903: 129). The Greek is περὶ διαφορᾶς νοσημάτων, etc. (See Ritter and Walzer, 1934: 812; Sezgin, vol.III, 1970: 89; Steinschneider, 1891: 281). (19)

6. كتاب تدبير الاصحاء (the Book of Treatment of Health). It was translated by Ḥubaish b. al-Ḥasan. The Greek title is τέχνη ὑγιεινή (Ibn Al-Nadīm, 1929: 403; Ibn al-Qifṭī, 1903: 129; Ritter and Walzer, 1934: 812; Sarton, vol.I, 1927: 306).

7. كتاب الادوية التى يسهل وجودها (The Book of Medicaments which are easy to find). This work is mentioned by Ibn Abī Uṣaibiʿah (1965: 144). The Greek is περὶ εὐπορίστων βιβλία γ΄ (Sezgin, vol.III, 1970: 120).

8. كتاب العادات (the Book of Habits). It was translated by Ḥubaish b. al-Ḥasan. Its original title is περὶ ἐθῶν. (Ibn al-Nadīm, 1929: 404; Ibn Abī Uṣaybiʿah, 1965: 140; Ibn al-Qifṭī, 1903: 130; Sezgin, vol.III, 1970: 105; Ritter and Walzer, 1934: 816).

9. كتاب سوء المزاج المختلف (the Book of Irregular Bad Temperament). It was translated by Ḥunain b.

Isḥāq. The Greek title is περi ἀνωμάλου δυσκρασίας (Ibn Al-Nadīm, 1929; 404; Ibn Abī Uṣaibi'ah, 1965; 141; Ibn al-Qifṭī, 1903; 130; Sezgin, vol.III, 1970; 108; Ritter and Walzer, 1934; 813).

10. كتاب الادوية المفردة (the Book of Simple Medicaments). It was translated by Ḥunain. Sometimes the title appears as المفردات. The Greek title is περὶ κράσεως καὶ δυνάμεων τῶν ἁπλῶν φαρμάκων (Ibn Al-Nadīm, 1929; 404; Ibn Abī Uṣaibi'ah, 1965; 141; Ibn al-Qifṭī, 1903; 130; Sezgin, vol.III, 1970; 109; Steinschneider, 1891; 287; Sarton I, 1927; 306).

11. كتاب قوى الاغذية (the Book of the Powers of Nourishment). It was translated by Ḥunain b. Isḥāq. The Greek title is περὶ τροφῶν δυνάμεως βιβλία γ' (Ibn Al-Nadīm, 1929; 404; Ibn Abī Uṣaibi'ah, 1965; 143; Ibn al-Qifṭī, 1903; 131; Sezgin, vol.III, 1970; 117; Sarton, vol.I, 1927; 306).

12. كتاب التدبير الملطف (the Book of the Light Regimen). It was translated by Ḥunain b. Isḥāq. The Greek title is περὶ λεπτυνούσης διαίτης (Ibn Al-Nadīm, 1929; 404; Ibn Abī Uṣaibi'ah, 1965; 143; Ibn al-Qifṭī, 1903; 131; Sezgin, vol.III, 1970; 117).

13. كتاب تعرف علل الاعضاء الباطنة (the Book of the Diagnosis of Diseases of the Internal Organs). This work is also entitled الاعضاء الآلمة (the Sick

Organs). It was translated by Ḥubaish. The Greek title is περὶ τῶν πεπονθότων τόπων (Ibn Al-Nadīm, 1929: 403; Ibn Abī Uṣaibiʿah, 1965: 136; Ritter and Walzer, 1934: 813; Sezgin, 1970: 90-1).

14. كتاب تركيب الادوية (the Book of Composition of Medicaments). It was translated by Ḥubaish b. al-Aʿsam. The Greek title is περὶ συνθέσεως φαρμάκων (Ibn Al-Nadīm, 1929: 404; Ibn Abī Uṣaibiʿah, 1965: 143; Ibn al-Qifṭī, 1903: 131; Sezgin, vol.III, 1970: 118; Sarton, I, 1927: 306).

15. كتاب الادوية المقابلة للادواء (the Book of Medicaments Counteracting Diseases). It was translated by ʿĪsā b Yaḥyā. The Greek title is περὶ ἀντιδότων βιβλία β΄ (Ibn Al-Nadim, 1929: 405; Ibn Abi Usaibiʿah, 1965: 144; Sezgin, vol.III, 1970: 121).

16. كتاب الترياق الى فِيسُون (the Book on Antidotes to *Fīsūn*). It was translated by Yaḥyā b. al-Baṭrīq. The Greek title is πρὸς Πίσωνα περὶ τῆς θηριακῆς (Ibn Al-Nadīm, 1929: 405; Ibn Abī Uṣaibiʿah, 1965: 144; Ibn al-Qifṭī, 1903: 131; Sezgin, vol.III, 1970: 121-2; Ritter and Walzer, 1934: 815).

17. كتاب الترياق الى بَمْفُولِيانُوس (the Book of Antidotes to *Bamfūliyānūs*). It was translated by ʿĪsā b. Yaḥyā. The Greek title is περὶ θηριακῆς πρὸς Παμφιλιανόν (Ritter and Walzer, 1934: 815; Sezgin, vol.III, 1970: 121).

18. كتاب في النبض الصغير (the Book on the Small Pulse). It was translated by Ḥunain. The Greek title is περὶ σφυγμῶν τοῖς εἰσαγομένοις. (Ibn Abī Uṣaibiʿah, 1965: 134; Steinschneider, 1891: 280; Ritter and Walzer, 1934: 813-4; Sezgin, vol.III, 1970: 81).

19. كتاب قوى النفس تابعة لمزاج البدن

(the Book of Strength of Spirit Depends upon Dispositions of the Body). It was translated by Ḥubaish b. al-Ḥasan for Muḥammad b. Mūsâ. The Greek title is Ὅτι ταῖς τοῦ σώματος κράσεσιν αἱ τῆς ψυχῆς δυνάμεις ἕπονται. (Ibn al-Nadīm, 1929: 405; Ibn Abī Uṣaibiʿah, 1965: 147; Ibn al-Qifṭī, 1903: 132; Biesterfeldt, 1973: 9 & 16 à passim; Ritter and Walzer, 1934: 811 Sarton, vol.I, 1927: 304).

20. كتاب في تدبير الامراض الحادة على رأى بقراط

(the Book on Regimen in Acute Diseases in Accordance With the Theories of Hippocrates). It was translated by Ḥunain. The Greek title is περὶ τῆς κατὰ τὸν Ἱπποκράτην διαίτης ἐπὶ τῶν ὀξέων νοσημάτων. (Ibn al-Nadīm, 1929: 404; Lyons, 1969: 77-111; Sezgin, vol.III, 1970: 118; Ritter and Walzer, 1934: 815).).

(iii). **Works by Rufus:**

Rufus produced many medical works, which were well known among the Arabs (Ibn al-Qifṭī, 1903: 185). Ibn al-Nadīm (1929: 405-406) mentions 42 of these works, and Ibn Abī Uṣaibiʿah (1965: 57) mentions 57. However, only a few of

the works are extant. All the following works are lost, or have survived in fragments (Daremberg, 1879: preface xxxii-xxxix; see also Sezgin, vol.III, 1970: 64-8):

1. كتاب الترياق (the Book of Antidotes).
2. كتاب اللبن (the Book of Milk).
3. كتاب التين (the Book of Figs).
4. كتاب الادوية القاتلة (the book of Deadly Medicaments).
5. كتاب الذكر (the Book of Memory).
6. كتاب مراتب الادوية (the Book of Classes of Medicaments).

(v). **Works by Oribasius:**

1. كتاب الى ابنه اسطاث (A Book to his son, Eustathius). This work was translated by Ḥunain b. Isḥāq (Ibn Al-Nadīm, 1929: 407; Ibn al-Qifṭī, 1903: 74). It is σύνοψις πρὸς Εὐστάθιον τὸν υἱὸν αὐτοῦ, a summary of ἰατρικαὶ συναγωγαί (Sezgin, vol.III, 1970: 154; Leclerc, I, 1876: 253; Sarton, I, 1927: 373; **see also p.44 n.1).**
2. كتاب الادوية المستعملة (the Book of Used Medicines). This work was translated by Isṭafan b. Basīl. The Greek title is εὐπορίστα (Ibn Al-Nadīm, 1929: 407; Ibn al-Qifṭī, 1903: 74; Sezgin, vol.III, 1970: 154; Leclerc, I, 1876: 253; Sarton, I, 1927: 373).

(V) Works by Paul of Aegina:

1. كتاب الكناش فى الطب (the Pandect in Medicine). This work was translated by Ḥunain b. Isḥāq. Gr. ὑπόμνημα or ἐπιτομῆς ἰατρικῆς βιβλία ἑπτά (Ibn al-Nadīm, 1929; 407; Adams, 1844-7; Sezgin, vol.III, 1970; 169)).

(vi). **Work by Dioscorides:**

1. كتاب الحشائش (the Book of Herbs) (Ibn al-Nadīm, 1929; 408; Ibn Abī Uṣaibiʿah, 1965; 59; Ḥājjī Khalīfah, vol.V, 1850; 37-8). The Greek title is περὶ ὕλης ἰατρικῆς (Sezgin, vol.III, 1970; 59). Other Arabic titles are الحشائش والنبات (the Herbs and Plants), هيولى علاج الطب (Material for Medical Treatment) and كتاب الادوية المفردة (the Book of Simple Drugs). The Latin title is *Materia Medica*. According to *al-Fihrist* (Ibn al-Nadīm 1929; 408), it was translated by Ḥunain b. Isḥāq or Ḥubaish b. al-Ḥasan. While Ibn Juljul (1955; 22) reports that it was translated by Iṣṭafan b. Basīl, and was checked by Ḥunain.

Indian

From the Indian world came some medical works, most of which are lost. Among of them which are mentioned by Arabic sources are as follows:

1. كتاب اسرار المواليد (the Book of the Secrets of Labour) of Kankah. This work is mentioned by Ibn Abī Uṣaibiʿah (1965; 473). Ḥājjī Khalīfah (vol.V, 1850; 161)

gives كتاب المواليد (the Book on Labour), a book which is also ascribed to Jaudar (see below).

2. كتاب الطب (the Book of Medicine) of Kankah. This is mentioned only by Ibn Abī Uṣaibiʿah (1965: 473).

3. كتاب المواليد الكبير (the Great Book on Labour) of Ṣanjahal. (Ibn Abī Uṣaibīʿah, 1965: 473; Ḥājjī Kalīfah, vol.VI, 1852: 242).

4. كتاب شرك (the Book of *Sharak*). This work, which was translated by ʿAbd Allāh b ʿAlī, is written as سيرك in *al-Fihrist* (Ibn al-Nadīm, 1929: 421) and *Kashf al-Ẓunūn* (Ḥājjī Kālīfah, vol.V, 1850: 101-2); while other sources give شرك (Ibn Abī Uṣaibīʿah, 1965: 473; al-Yaʿqūbī, vol.II, 1955: 108). Obviously, *Sharak* is a transliteration of Caraka, or Charaka, a physician who wrote a second-century compendium, *Caraka-Saṃhitā* (Sezgin, vol.III, 1970: 198; Sarton, vol.I, 1927: 284).

5. كتاب سسرد (the Book of *Susrud*). It was translated by Mankah at the suggestion of Yaḥyā b Khālid the Barmakid (Ibn al-Nadīm, 1929: 421; Ibn Abī Uṣaibīʿah, 1965: 474; al-Yaʿqūbī, vol.II, 1955: 108). This compendium is the *Suśruta-Saṃhitā* or the *Saṃhitā of Suśruta* (Sezgin, vol.III, 1970: 197-8; Sarton, I, 1927: 77).

6. كتاب ندان (the Book of *Nidān*) of Mādhavakara or Mādhava. It is *Nidāna* (Cause), a treatise which is also called *Rugviniścaya* (Study of Diseases). Mādhavakara flourished in the eighth and ninth century (Ibn Abī Uṣaibiʿah, 1965: 474; al-Yaʿqūbī, vol.II, 1955: 108; Sezgin, vol.III, 1970: 199; Sarton, vol.I, 1927: 537).

7. كتاب سندستاق (the Book of *Sindistāq*). This title which literally means صفوة النجح (the Best of Success) is given by Ibn al-Nadīm (1929: 421), who says that it was translated by Ibn Dahn. Other authorities give سند هشان which means صورة النجح (the Form of Success) (see Ibn Abī Uṣaibiʿah (1965: 474; Ḥājjī Kālīfah, V, 1850: 96; al-Yaʿqūbī, II, 1955: 108). سند هسار or سند هشار in *al-Ḥāwī* (see p. ١٥٥ note ١ in this thesis) is probably this work (see Sezgin, vol.III, 1970: 199-200). Its original title is probably *Siddhayoga*, a work of Vṛinda (see Sezgin, *Ibid.*).

8. كتاب توقشتل (the Book of Tūqashtal). This title is given by Ibn al-Nadīm (1929: 421). Ibn Abī Uṣaibīʿah (1965: 474) gives نوفشل as the title.

9. كتاب روسا (the Book of Rūsā *al-Hindiyah* [Indian woman] on the treatment of women). (Ibn al-Nadīm, 1929: 421; Ibn Abī Uṣaibiʿah, 1965: 474; Ḥājjī Kālīfah, V, 1850: 88).

10. كتاب التوهم فى الامراض والعلل (the Book of *Conjecture* on Diseases and Ailments) of Tūqashtal or Abī Qubail. According to Ibn al-Nadīm (1929; 421), this work was written by Tūqashtal, but Ibn Abī Uṣaibiʿah (1965; 474) ascribes it to a certain Abī Qubail. (It is possible that difficult manuscript readings could have given rise to a confusion between *Tūqashtal* [توقسطل (?)] and *Abū Qubail* [ابو قبل (?)]).

11. كتاب السموم (the Book of Poisons) of Shānāq, or Cāṇakya. It was translated by al-ʿAbbās b. Saʿīd al-Jauharī for al-Ma'mūn (Ibn Abī Uṣaibiʿah, 1965; 474; Ḥājjī Ḫalīfah, V, 1850; 96). Its original title is probably *Kauṭilīyah Arthaśāstra* (see Sezgin, vol.III, 1970; 193-6).

12. كتاب المواليد (the Book on Labour) of Jaudar. This work and its writer are listed by Ibn Abī Uṣaibiʿah (1965; 474).

13. كتاب فيما اختلف الهند والروم فى الحار والبرد وقوى الادوية وتفصيل السنة

(A Book Dealing with Calefacient, Frigorific and Fortifiant drugs, and details of their nature, concerning which the Indians and the Greeks differ). This title is given by Ibn Abī Uṣaibiʿah (1965; 474) and al-Yaʿqūbī (vol.II, 1955; 108).

14. كتاب اسماء عقاقير الهند (the Book of the Names of the Drugs of India). This work was translated by Mankah for Isḥāq b. Sulaimān (Ibn al-Nadīm, 1929; 421). It is given as كتاب تفسير اسماء العقار باسماء عشرة (The Book Which Explains Names of Drugs in Ten Names) by Ibn Abī Uṣaibiʿah (1965; 474), Ḥājjī Khalīfah (vol.V, 1850; 63) and al-Yaʿqūbī (vo,II, 1955; 108). The author is not known.

15. كتاب استانكر الجامع (the Book of *Astānkar*, the Comprehensive). This work was translated by Ibn Dahn (Ibn al-Nadīm, 1929; 421). Ibn Abī Uṣaibiʿah (1965; 474) gives كتاب اسانكر الجامع and Ḥājjī Khalīfah (vol.V, 1850; 63) اسانكر الجامع فى الطب. The original title is probably *Aṣṭāṅgahṛdaya, or Aštānqahradī*, which is attributed to Vāgbhaṭa (see Sezgin, vol.III, 1970; 198-9; Dodge, 1970; 710).

16. كتاب علاجات الحبالى (the Book of the Treatments of Pregnant Women). Its author is not known (see Ibn al-Nadīm, 1929; 421; and Ibn Abī Uṣaibiʿah, 1965; 474).

17. كتاب مختصر فى العقاقير (A Short Treatise on Drugs). The author is not known (see (Ibn al-Nadīm, 1929; 421; Ibn Abī Uṣaibiʿah, 1965; 474; and Ḥājjī Khalīfah, vol.V, 1850; 118).

18. كتاب السكر (The Book of Intoxication). The author is not given (see Ibn al-Nadīm, 1929: 421; Ibn Abī Uṣaibiʿah, 1965: 474; Ḥājjī Khalīfah, vol.V, 1850: 95).

19. كتاب رأي الهند فى اجناس الحيات وسمومها (The Book of the Opinions of the Indians About the Various Kinds of Snakes and Their Poisons). We have no information concerning its original author (see Ibn al-Nadīm, 1929: 421; and Ibn Abī Uṣaibiʿah, 1965: 474).

Syriac

The role of Syriac was as a mediator between Greek and Arabic. From the 5th century AD, a large number of Greek works were translated into Syriac (Meyerhof, 1944a: 1848). According to Ibn Abī Uṣaibiʿah (1965: 159), Sergius of Rêsh ʿAinâ was the first to translate Greek works into Syriac. Some of them were translated by other early scholars such as Job of Edessa and Ibn Shahdā (Meyerhof, 1926a:703-4). Most of the later translation work was carried out by Ḥunain b. Isḥāq and his pupils, the group who translated a large number of Greek works into Syriac. More than a hundred of Galen's works were translated by Ḥunain (Meherhof, 1944a: 1854). Among the Greek works translated into Syriac was Oribasius' *Kitāb al-Sabʿīn*.

This was translated into Syriac by Ḥunain b. Isḥāq and ʿĪsā b. Yaḥyā[1] (Ibn al-Nadīm, 1929; 407).

Mostly, Ḥunain translated Greek works first into Syriac before they were translated into Arabic (*Ibid*, 403). For example, Hippocrates' ''Ορκος[2] had been translated into Syriac by Ḥunain before Ḥubaish and ʿĪsā b. Yaḥyā translated it into Arabic (Ibn Al-Nadīm, 1929; 401). Galen's ''Οτι ταῖς τοῦ σώματος κράσεσιν αἱ τῆς ψυχῆς δυνάμεις ἕπονται was translated from the Syriac translation of Ḥunain by Ḥubaish for Muḥammad b. Mūsā (Biesterfeld, 1973; 9 & 16)[3]. Similarly, Galen's Περὶ τῆς ἰατρικῆς ἐμπειρίας was translated into Syriac by Ḥunain, and this version was translated into Arabic by Ḥubaish (Walzer, 1944; preface v & p.1).

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1. According to Ibn al-Nadīm (1929; 407), this translation consisted of one section. This work, '*the Book of Seventy*', is obviously a part of Oribasius' encyclopedia in 70 books, ἰατρικαὶ συναγωγαί, of which only one-third is still extant (Sarton, vol.I,1927:372-3 ; **see also p. 37 n.1 under "Works by Oribasius).**

2. The Arabic title is عهد بقراط (Ibn Al-Nadīm, 1929; 401; Ibn al-Qifṭī, 1903; 94; Ḥājjī Khalīfah, V, 1850; 120). Some writers, however, suggest that this work may be anterior to Hippocrates (Jones, vol.I, 1923; 289; Sarton, vol.I, 1927; 97).

3. See page **36 n.19.**

These examples suffice to show that Syriac served as an important channel for the transmission of Greek medical works into Arabic.

On the other hand, some works were originally written in Syriac. Among these were a book on dropsy by Sergius of Rêsh ᶜAinā, a book on uroscopy by Job of Edessa (Ullmann, 1978; 16), *al-Kunnāsh al-Kabīr* (the Great Pandect)
and *al-Kunnāsh al-Saghīr* (the Small Pandect) of Yaḥyā b. Sarāfiyūn, and *al-Kunnāsh* (the Pandect) of Ahrūn (Ibn al-Nadīm, 1929; 412-3). These works were also translated into Arabic. Ahrūn's *al-Kunnāsh*, for example, was translated into Arabic by Māsarjawaih *(Ibid.)*, the very first translator of Syriac medical books into Arabic (Meyerhof, 1937; 22). He added two more chapters to this original *Kunnāsh* which had consisted of thirty chapters (Ibn al-Nadīm, 1929; 13). Other works mostly reached the Arabs through the same process: translation, commentary and addition to existing sources.

Persian

Persian served as a bridge between Arabic on the one hand, and Greek and Indian works on the other. The Greek and Indian medical manuscripts which were purchased by Persian kings were translated into

Pahlavi. Later, these works were translated into Arabic. For example, *Suśruta-Saṃhitā*, the Indian work, was preserved in Pahlavi before its translation into Arabic by ʿAbd Allāh b ʿAlī (Ibn al-Nadīm, 1929: 421; Ibn Abī Uṣaibiʿah, 1965: 473). Similarly, *Kitāb al-Sumūm* of Shānāq was translated into Pahlavi for Yaḥyā b. Khālid b. Barmak by Mankah, and then it was translated into Arabic for al-Ma'mūn (Ibn Abī Uṣaibīʿah, 1965: 474-5). Moreover, Galen's περὶ αντεμβαλλομένων (De remediis parabilibus) is also supposed to have entered Arabic through Pahlavi (Ullmann, 1978: 17; see also Sarton, vol.I, 1927: 306).

Some of the Persian works which were translated into Arabic had been originally written in Pahlavi by non-Persian writers. One such work is *al-Kunnāsh* (the Pandect) of Theodorus, a Christian Greek physician who flourished in Persia under Shāpūr II (309-379 AD) (Ibn al-Nadīm, 1929: 421-2; Leclerc, vol.I, 1876: 24; Browne, 1921: 20; Sarton, vol.I: 372).

PART III

AL-ḤĀWĪ OF AL-RĀZĪ

AL-RĀZĪ

Life of al-Rāzī

Abū Bakr Muḥammad b. Zakariyyā, known to the West as Rhazes, was born, according to al-Bīrūnī, on 27 August 865 AD (1 Shaʿbān 251 AH), at Raiy in Ṭabaristān, Persia (Meyerhof, 1935; 322). Hence he was called al-Rāzī.

In his early life, al-Rāzī was a musician, who was skillful on the lute (Ibn al-Qifṭī, 1903; 271). He was also a poet and money-changer (Ibn Abī Uṣaibiʿah, 1965; 414-5 & 420).

Al-Rāzī probably studied literature and such sciences as mathematics, astronomy, philosophy, etc. in his native city, Raiy (*Ibid.*; 414), an ancient city that had been a centre of civilization well before the time of the Sāssānians (Minorsky, "Raiy", *Enc. Islam*, III, 1105-8).

We have no clear record regarding his teachers. In philosophy, al-Rāzī himself used to acknowledge that he studied this subject with a certain al-Balkhī (Ibn al-Nadīm, 1929; 416), but this figure cannot be identified with

certainty[1]. In medicine, al-Rāzī is supposed to have been a pupil of ʿAlī b Rabban al-Ṭabarī (Ibn al-Qifṭī, 1903; 231; Ibn Abī Uṣaibiʿah, 1965; 414). However, this is not accepted by some scholars, for it is hardly possible chronologically: al-Ṭabarī died some time after 850 AD, but before al-Rāzī was born (Meyerhof, 1931; 11). His teachers in other subjects are also not known to us.

It was only at the age of over thirty that al-Rāzī devoted himself to medicine, that is after his first visit to Baghdad. He visited the hospital of Baghdad - which was probably the Muqtadirī Hospital, founded in 918 AD (Meyerhof, 1935; 323). In this hospital, he met an old pharmacist. In this man's explanation about drugs and their origin, al-Rāzī was told how *orpine (ḥayy al-ʿālam)* cured hot inflammation afflicting a certain Greek *Aflūlan*'s arm by accident.

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1. According to Dodge (1970; 971 & 1097), al-Balkhī was ʿAlī b Shahīd, son or relative of Shahīd b. al-Ḥusain the philosopher. Elgood (1951; 196) identifies al-Balkhī as Aḥmad b. Sahl al-Balkhī, who was, according to Dodge (1970; 971 & 1097), a philosopher, geographer and student of al-Kindī. Some writers are not sure who al-Balkhī exactly was.

On his second visit to the hospital, al-Rāzī saw a foetus with two faces in one head. He was curious to find out how this happened. So interested was he in the answer and that conversation with the old pharmacist that al-Rāzī decided to study medicine, which changed his life and future career completely (Ibn Abī Uṣaibiʿah, 1965; 414-5).

After being educated as a physician, al-Rāzī devoted the rest of his life to the service of his society. He had a good chance to do so in his capacity as the director of the hospital of Raiy, and, later, in his capacity as the chief physician in the Muqtadirī Hospital (Ibn al-Qifṭī, 1903; 271; Ibn Abī Uṣaibiʿah, 1965; 415-6; Meyerhof, 1935; 323; Elgood, 1951; 197). Some of al-Rāzī's notes, for example his 'Thirty-three Clinical Observations', translated by Meyerhof (1935; 321-56), show the extent of al-Rāzī's services to his patients.

Al-Rāzī also held medical classes, as al-Bīrūnī reports that al-Rāzī had a great number of pupils (Ibid.; 331; see also Ibn al-Nadīm, 1929; 415-6). Unfortunately, we have no record about his pupils.

Like many famous physicians during medieval times, al-Rāzī travelled through various countries to serve nobles and princes. Among those he served were al-

Manṣūr b. Ismāᶜīl b. Khāqān, the governor of Khurasān, to whom he dedicated his book *al-Manṣūrī*, and ᶜAlī b. Wahsūdhān, the governor of Ṭabaristān, for whom he wrote *al-Mulūkī* (Ibn al-Nadīm, 1929: 415; Ibn al-Qifṭī, 1903: 272; Ibn Abī Uṣaibiᶜah, 1965: 419).

Towards the end of his life, al-Rāzī became blind from a cataract. Some ascribe the blindness to the excessive eating of beans of which he was very fond (Ibn al-Nadīm, 1929: 416). Some assert that it was due to a blow which he received on the head by some 'great man' who accused him of fraud and charlatanism, after al-Rāzī declined to do a test to produce gold by an alchemical experiment (Browne, 1921: 46). Others say that the blindness was probably caused by excessive study, for al-Rāzī seldom left his books and was always to be found copying manuscripts or writing out fair copies of his lectures. He himself admitted that he sorely overtried his powers and used to spend many a night with a friend reading Hippocrates' and Galen's works (Elgood, 1951: 197-8). Al-Rāzī refused to undergo an operation, on the ground that he desired to see no more of a world with which he was disgusted and disillusioned (Ibn al-Qifṭī, 1903: 272; Ibn Abī Uṣaibiᶜah, 1965: 420).

He died in his native city, Raiy, but the date is uncertain. Our various records give the years of 912

(300), 923 (311), 925 (313), 932 (320) and 974 AD (364 AH) (Ibn al-Qifṭī, 1903: 272; Ibn Abī Uṣaibiᶜah, 1965: 420; Ḥājjī Khalīfah, vol.III, 1843: 12; Elgood, 1951: 198; Meyerhof, 1935: 322-3). However, According to Meyerhof (*Ibid.*), the correct date is that given by al-Bīrūnī, i.e. 26 October 925 (5 Shaᶜbān 313).

Al-Rāzī's Works

It is said that al-Rāzī wrote more than two hundred works in several intellectual fields. Most of them, which are enumerated by biblioghraphers[1], are lost. However, the works which have remained are amply sufficient to enable us to appreciate his learning.

As al-Rāzī was competent in many fields, his works are various. An encyclopedia in music, entitled *Fī Jamāl al-Musīqī* (On the Beauty of Music) is ascribed to him (Elgood, 1951: 196). He also composed some poems, in which he mostly discusses about metaphysical topics. Moreover, he wrote many works on medicine, alchemy, philosophy, mechanics, physics, mathematics, astronomy, optics, etc. Among these works, the alchemical and medical are the most significant ones.

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1. For a detailed list of his books see Ibn al-Nadīm (1929: 416-9), Ibn al-Qifṭī 1903: 272-7), Ibn Abī Uṣaibiᶜah (1965: 421-7), Ḥājjī Khalīfah (1837-1964; *passim*) and Ābādī (1960; *passim*).

Al-Rāzī and Alchemy

According to al-Bīrūnī, twenty-one of al-Rāzī's works were on alchemy (Hamarneh, 1973: 476). Those which survived were seriously studied by western scholars such as Gerard of Cremona, Berthelot, Vincent of Beauvals and Roger Bacon (Steele, 1929: 10-46).

Al-Rāzī possessed a remarkable knowledge of the alchemical properties of metal, and was more free from charlatanry and quackery than all the alchemists before and after him (Meyerhof, 1941: 45). He verified his alchemical theories by experiments. For example, to test his view concerning the effect of metallic mercury on a man, he tested it on an ape. In *Kitāb al-Manṣūrī*, book viii cap. xlii - quoted by Withington (1894: 148) - al-Rāzī says, "I do not suppose that any great harm would happen to a man who should drink metallic mercury except severe pains in the stomach and intestines. I gave some to an ape which I had, nor did I see any evil befall him beyond that above mentioned, which I concluded from the fact he twisted about, and kept biting at his stomach, and pawing it with his hands".

He also conducted experiments to transform lead, tin, copper and iron into silver or gold, and to improve ordinary stones, such as pebbles, glass and

ordinary crystals into red ruby, green emeralds and other precious stones. In short, he was the first to transform alchemy into a practical science. Therefore, he is considered as the creator of a new alchemy (Heym, 1937: 188). He is also called 'the experimentor', not only in alchemy, but also in the other sciences with which he was involved (Withington, 1894: 145).

Al-Rāzī introduced the use of some chemical substances into medicine. He was the first to use mercury as a purgative. He also introduced white lead ointment into pharmacopoeia, so that it became known in the Middle Ages as 'Album Rhazis' (Elgood, 1951: 203). There are many more chemical substances used by him in the preparation of drugs, which can be seen in *al-Ḥāwī*. Clearly, he applied his alchemical knowledge successfully. This explains why later scholars such as Sarton (vol.I, 1927: 609) refer to him as the 'ancestor of the iatrochemists''.

Al-Rāzī's Medical works

Al-Rāzī has a high reputation in medicine. Al-Bīrūnī asserts, "Abū Zakariyyā has promoted the medical profession to a high degree and was needed and called upon by kings ..... and they received him with great respect" (Hamarneh, 1973: 476). Haly Abbas admits, "Far be it

from me to contest his excellence or to deny his knowledge of the medical art and his eminence as an author" (Meyerhof, 1935; 328). Withington (1894; 146) writes, "Rhazes was the most independent and therefore the most interesting of the Arabic writers on medicine". Browne (1921; 44) considers al-Rāzī as "the greatest and most original of all Muslim physicians, and one of the most prolific as an author". Meyerhof (*Ibid*, 321) observes, "(His works) established his reputation as an excellent observer and at the same time a critical compiler of Greek, Syriac and early Arabic medical knowledge". Meyerhof (1944b; 1859) adds, "He was regarded as an outstanding clinician as well as a brilliant diagnostician and therapeutist ..... . He was an uncommonly prolific writer, especially in the field of pharmacology, and his numerous works were zealously copied by later authors". It is obvious from these quotations that the place of al-Rāzī in the history of medicine and the value of his medical works, which were more than a half of all of his writings, are widely acknowledged.

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1. 'Iatrochemistry' refers to early attempts at the application of drugs to medicine.

One of al-Rāzī's most important books is *al-Jadarī wa al-Ḥaṣbah* (On Smallpox and Measles), which is the oldest existing treatise on smallpox and measles (Adams, I, 1844; 330; Withington, 1894; 146). In it, al-Rāzī distinguishes clinically between the two diseases (Greenhill, 1848; 23-73). Since this work contains the basic concepts in the evolution of ideas on smallpox and measles, it has been studied closely by specialists in these diseases (Wilkinson, 1979; 2-4).

Al-Jadarī wa al-Ḥaṣbah is considered as the most original work of al-Rāzī. Of it, Greenhill (1848; 3) writes, "Its genuineness has never been doubted". Neuburger says, "It ranks high in importance in the history of epidemiology as the earliest monograph upon small-pox, and shows us Rhazes as a conscientious practitioner" (Meyerhof, 1935; 324).

Being so important, it has been published in various languages. It was translated from the original Arabic into Latin and Syriac. The latter version was translated into Greek at the command of one of the Emperors of Constantinople, perhaps Constantine Dukas (1059-67 AD), or Andronicus II (1281-1328) (see Greenhill, 1848; 3-4 & 13).

Another of al-Rāzī's work which used to be studied by scholars is *Kitāb al-Ṭibb al-Manṣūrī* (the Book of Medicine Dedicated to al-Manṣūr), which was principally compiled by al-Rāzī from the writings of Hippocrates, Galen, Oribasius, Aëtius and Paulus Aegineta (*Ibid*, 77-8). During the later Middle Ages until late in the sixteenth century, its ninth book (*Liber Nonus*), "On the Diseases of All Parts of the Body and Their Treatments", was the most famous medical compendium. It formed the basis of medical learning. It was much in vogue, and was publicly read in the schools, and commented upon by the most learned professors (Greenhill, 1848; 78; Meyerhof, 1935; 324; Withington, 1894; 147).

Kitāb al-Ṭibb al-Manṣūrī was translated into Latin and several times published in the fifteenth and sixteenth centuries together with al-Rāzī's other smaller books (Greenhill, 1848; 82-3).

AL-ḤĀWĪ

Place of *al-Ḥāwī*

Kitāb al-Ḥāwī fī al-Ṭibb (the Comprehensive Book of Medicine) is al-Rāzī's most important and voluminous work. It is accounted the largest encyclopaedia of Graeco-Arabic medicine (Singer and Underwood, 1962; 74). According to Meyerhof (1941; 45) it is "the greatest encyclopedia of therapeutics written during the Middle Ages". Moreover Elgood (1951; 199) says, "This is highly desirable for the *Continens* must be regarded as more important, even than the *Canon* of Avicenna, to the historian of Arab medicine". In addition, Greenhill (1848; 99) asserts, "It is universally admitted to be one of the most valuable and interesting medical works of antiquity".

Compilation of *al-Ḥāwī*

It is generally accepted that *al-Ḥāwī* was a collection of al-Rāzī's private notes. It is to be looked upon rather as a foundation for his smaller works. From comparing certain passages in *his al-Jadarī wa al-Ḥaṣbah* with parallel ones in a chapter also entitled *al-Jadarī wa al-Ḥaṣbah* of *al-Ḥāwī*

(seventeenth volume of the Hyderabad edition), the latter was apparently roughly thrown together, and afterwards worked up and arranged by al-Rāzī to form the former (Greenhill, 1848; 3, 27-73 & 101-131). It was also probable that as Haly Abbas says, "He (al-Rāzī) composed it as a special memorandum of reference for himself for his old age and time of forgetfulness; or being afraid of damage which might occur to his library (Meyer 1935; 327). Another possibility is that the notes were collected by al-Rāzī for his lectures.

Al-Ḥāwī is clearly a collection of excerpts from ancient Greek, Syriac, Indian and Arabo-Persian medical works and al-Rāzī's original records based on his experiences drawn from case histories of his patients. Of this compilation, Meyerhof (1935; 325-6) states, "It is an invaluable record of quotations from several hundreds of only partly known or completely forgotten writers whose works are lost, not to mention the value of so many early Arabic translations from known Greek medical writers whose texts are available in Greek alone through late Byzantine MSS. More than all this, we are bound to admire the learning, acuity, observation and the often surprisingly sound judgement of Rhazes himself in his personal notes and comments. From these notes, there could be extracted an important record of his medical activity, as well as

of his clinical considerations on all the diseases known to the physicians of that remote period".

Publication of *al-Ḥāwī*

Al-Ḥāwī is a posthumous work, that is to say, it was first published after al-Rāzī's death in Raiy. According to Ibn Abī Uṣaibiʿah (1965; I:20), Ibn al-ʿAmīd, the *wazīr* of Rukn al-Daulah, was responsible for the compilation and publication of *al-Ḥāwī*. This *wazīr* asked for the notes from al-Rāzī's sister and offered her large sums of money until she showed him the materials for the book. Thereupon, he assembled the doctors, al-Rāzī's puplis and caused them to put the notes in order and to draft them into book form.

Al-Ḥāwī was translated into Latin by the Jewish Faraj b. Sālim (Farraguth) in Sicily, under the auspices of King Charles of Anjou. This work, which took nearly the whole life time of the translator, was completed in 1279 AD. It was first printed at Brescia in Northern Italy in 1486 AD (Meyerhof, 1935; 325). Today, we have several Latin editions of *al-Ḥāwī*, under the title of *Liber Continens*.

Portions of the original text can be seen in various libraries in Europe. From the manuscripts

existing in the Escorial Library, St.Lorenzo's Churh, Madrid, and in the National Library, Madrid, *al-Ḥāwī* was edited and published in its original Arabic by the Dairatul Maarif, Osmania University, Hyderabad, under the auspices of the Ministry Education, Government of India. This edition is the major reference for this research. ("Ar-Razi's al-Hawi (Continens of Rhazes): Introduction", *Bulletin of the Department of History of Medicine, Hyderabad*, vol.I, 1963, pp. 172-174).

A SAMPLE OF AL-ḤĀWĪ

This discussion deals with the **Fourth** and **Fifth** Chapters of volume I of al-Rāzī's book of *al-Ḥāwī al-Kabīr* in the Hyderabad edition 1955-1970 [1*], based on MS of "Maktabah Khānqāh Pihlawārī Sharīf of Buhār" (MS B) as the original MS, and MS 806 of the Escorial Library (MS A) (see al-Rāzī, vol. I, 1955-1970; footnote by editor p. 2).

This section is selected to be a sample of the kind of treatment to be found in al-Hāwī as a whole, showing the development of Arabian medicine as the result of a movement towards compilation. This selection, in which al-Rāzī presents medical ideas from ancient nations and a large number of drugs, possibly includes the best collection of foreign medical ideas to be found in Arabic medical works.

Comment on the Text

Generally, it is presented in such a manner that al-Rāzī first extracts the ideas of his predecessors, the earlier authorities, on each disease, its causes, symptoms and treatment; and at the end, he usually gives his comments, marked by لی (Mine, or my comment, or my opinion).

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1. See the translation pp. 97-144 and the Arabic text pp. 150-166).

Those authorities are Hippocrates, Aristotle, Pythagoras, Galen, Rufus, Paulus, Caraka (Charaka), Vṛinda, *Qulhumān*, Ahrun, Ibn Sarābiyūn, Māsarjawaih (Al-Yahūdī), *Fūbūs*, Abū Juraij, Jūrjis, Bakhtīshūʿ, Ibn Māsawaih, Ibn Māsah, *al-Khūz*, al-Ṭabarī, Ḥunain, Ibn al-Biṭrīq, ʿAbdūs and *'Majhūl'*. Among them, *Fūbūs*, *Qulhumān*, *al-Khūz* and *'Majhūl'* have not been identified with certainty, or are unknown.

Some of the original works which are referred to in our text are extant. Some of them have been lost or survive only in fragments.

It is not always possible to identify exactly from which individual authors or treatises or particular sections or views or information cited in *al-Ḥāwī* have been extracted. Sometimes it is unclear as to which one is the authority al-Rāzī refers to, as he often neglects to state the name of the authority in question. For instance, in "قال... طيماوس المقالة الاولى" (*88.19*)[1*], قال may refer to either Plato, the original writer of *Timaeus*, or Galen, since this work reached the Arabs through Galen (see page 107 note 2), just as in the case of Hippocrates' works, many of which have come down to the Arabs in Galen's commentaries (see page 30; see also Ullmann, 1978: 11-12).

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*1. "88.19" stands for "page 88 line 19 of our Arabic text of *al-Ḥāwī*".

Moreover, in "من قوى النفس، ... قال والدم الكثير الغليظ الكثير الحراة ...." (88.10-12), we may assume that قال refers to Galen, the author of قوى النفس (see p.36 n.19), (while al-Rāzī does not mention the name whom قال refers to). If so, we are wrong, because in the original text of this work, it refers to Aristotle, not Galen! (see p.104 note 1).

Since many original works reached the Muslims through commentators, these works have been interpolated with the ideas of the commentators. Al-Rāzī can be seen to have consulted some badly translated works, where the translations have been unfaithful to their original. In such works, the original opinions are "omitted, changed and added" (see Mattock, 1968; *in introduction* i-iii). Consequently, when al-Rāzī used these works, it was difficult for him to classify the original views and the interpolated ones.

Those are among the reasons why most of the quotations in our text cannot be traced in the original sources.

However, a few quotations can be traced. But, al-Rāzī on many occasions paraphrases the sayings of the authorities he refers to. A representative example of this is as follows:

Our text (*90.8-13*: see translation below p. 110-1) reads:

الطبرى ، قال ... وينفع للحفظ ان يؤخذ ثلاثين كندر وعشرة دراهم فلفل فيدقان و شرب منه على الريق كل يوم مثقالا الى مثقالين اربعين يوما ثم يؤخذ وج فيغمر بسمن البقر و يدفن في الشعير اربعون يوما يصب عليه غمرة عسل يدفن ايضا فى الشعير عشرين يوما ثم يوكل منه كل يوم قطعة.

The original (al-Ṭabarī, 1928: 151-2) runs:

دواء للحفظ و الابردة و تقوية المعدة ، يؤخذ من اللبان منا و يدق مع وزن عشرة دراهم فلفل و يقتمح منه كل يوم على الريق مثقالا الى ثلثة مثاقيل اربعين يوما ثم تاخذ ما شئت من الوج و تجعله فى جرة خضراء او فى قارورة و تصب عليه من سمن البقر ما يغمره و تدفن فى الشعير ايضا عشرين ليلة و تأكل منه كل يوم قطعة.

It can be seen that al-Rāzī's quotation and al-Ṭabarī's original are different. Thus, for instance:

(i) Al-Ṭabarī's اللبان منا (one مَنّ[1] of frankincense) is changed to ثلاثين كندر (30 [?] frankincense).

(ii) ويدفن فى الشعير اربعون يوما which is not in al-Ṭabarī's *text*, is added to al-Rāzī's.

(iii) Al-Ṭabarī's مثقالا الى ثلثة مثاقيل is altered to مثقالا الى مثقالين.

1. It is a weight of 2 رطل (Wehr); Cf. It is equal to 160 *drachms* (Hāshim, 1986: 22).

Under the heading لى, he sometimes shows his agreement and elaborates with knowledge which healready has. A example of this is as follows:

من قوى النفس قال الرطوبة تبلد النفس و اليبس يشحذ ها *(88.10)*

(See translation below p. 103).

لى : فاما أن يكون اليبس مضرابا بالذهن نفسه فلا بل هو زايد ابدا ، لكن افعال النفس عندنا بحد لا يزيد يجاوزه اليبس الغالب (89.7-9)

(See translation below p. 103).

Sometimes he gives a different view. Compare these two different preparations for amnesia:

الطبرى ، . . . . يؤخذ وج فيغمر بسمن البقر *(90.11)*

(See translation below p. 110)

لى : ينبغى ان يوكل وج مربى بالعسل بلا سمن *(90.13)*

(See translation below p. 111)

The doctrine of humours and temperament can be clearly seen. The excess of coldness, which produces cold bad temperament, generates the impairment of the memory *(86.13)*; hot temperament causes delirium *(87.11)*; predominant moistness produces dullness and laziness *(89.1-2)*; and so on. These will be worse if they are accompanied by corrupt phlegm and bile *(87.17-19)*. (See also p.11 n.2).

The above determines the treatment to be decided. According to *the Sick Organs*, if the mucous discharge increases, the brain must be dried *(86.15)*, because it reveals that moistness (which corresponds to phlegm according to the humoural theory) predominates in the brain. Ahrun shows that when corruption of the brain is due to humour, this humour should be discharged *(91.2)*.

They also determine what drug will be given. For corruption due to cold humour, a hot drug is suggested; for a disease due to hotness, a cold drug is given; for inflammation due to coldness, hot medicine is given; for a corruption due to coldness and dryness, a hot and moistening preparation is prescribed; for a corrupt humour which needs to be discharged, an attractive, or purgative drug should be applied; and so on.

Hotness is countered with a cold substance. For example, cold water is gargled for hot inflammation *(101.13)*. On the other hand, to cure cold disease, such as phlegmatic inflammation, the medicine should be hot. Hot water and *oxymel* are suggested as gargles against phlegm *(101.14-15)*. Galen shows that the juice of ماميران [celandine] purges the superfluity out of the brain "because it is very hot" *(96.7-8)*. Ibn

Māsawaih gives ابى غليس [pimpernel] for cleansing the head of phlegm *(100.6)* so does al-Rāzī (95.20). This is the same as Dioscorides' opinion (al-Rāzī, vol.XX, 1955-70; 116, n.136; Ibn al-Baiṭār, vol.I, 1967; 62). *Pimpernel* has some hot and attractive properties, and this is obviously agreed upon by all ancient authorities, such as Dioscorides, Galen, Oribasius and Paulus, and by modern physicians too (see al-Rāzī, vol.XX, 1955-70; 116, n.136; Adams, vol.III, 1944-7; 43).

For the corruption of the memory due to moistness, al-Rāzī prescribes drugs such as انقرويا (i.e. بلادر) [cashew nut], ثافسيا [thapsia], جند باد ستر [castoreum], مرزنجوش [sweet marjoram], مسك [musk], etc. (92.2-6), which are drying (see al-Rāzī, vol. XX, 1955-70; 133, 223-4, 259-260, and XXI 492, 516). For the corruption due to coldness and dryness he suggests hot and moistening drugs *(92.7-9)*. In short, al-Rāzī, as many other physicians during his time, was a follower of the humoural theory.

In one place, we see Rufus prescribes emetics and a diet *(95.1)*. Ibn Sarābiyūn, too, prescribes a diet and sitting in a room which is lit *(91.18-92.2)*. Beside sitting in a dry place, al-Rāzī also prescribes evacuation with purgatives, and massage (92.2-9). These remind us of the methods which have been used by Susruta, who purifies the patient, accommodates him in

a room and prescribes a diet (see p.6), and the theory of purification applied by Hippocrate. (see p.8).

Drugs to be taken orally are usually given on an empty stomach, as done by al-Ṭabarī *(90.10)* and Ibn Māsawaih *(91.15)*. This idea is also frequently seen in Hippocrates' works (see Mattock, 1968; 15 & 19; Mattock and Lyons, 1968; 31) and Indian works such as *Suśruta-Saṃhitā* (see Bhishagratna, vol.II, 1963; 523 & *passim*).

The association between medical practice and belief of ancient people influenced them in determining the effects of drugs. As we have seen, in the opinion of the ancient Mesopotamians, the more serious the disease the more nauseating should the medicine be, because they believed that the evil spirit which caused the disease, would be disgusted by such remedies (Elgood, 1951; 5). From time to time, more scientific methods were used. The effects of drugs were learned by practice or analogy, "as for instance the same medicament may act when warm on the human body and when cold on that of a lion or of a horse" (J.Lippert, "Adwiya", *Encyclpedia of Islam*). This knowledge then passed from one physician to another, from generation to generation, through oral transmission or written works. Therefore, we may suppose that the opinion of

one authority on the effects of drugs as given in the text of *al-Ḥāwī* may well have been copied by that authority from some earlier authority. Al-Rāzī may also derive this knowledge from his predecessors. Nevertherless, he, who is titled as "the experimentor", frequently derives his knowledge from his own practices, so that he is the introducer of some chemical substances to the medical art, as we have said (see p. 52-3). His objection to al-Ṭabarī's opinion on the use of ghee in the treatment for amnesia, as we have mentioned above (see p.65), may have been based on his experiments. It is therefore, not surprising that, as in other subjects with which he was involved, he has a critical view in determining the effects of drugs. As usual, when an opinion should be proved before accepted, he remarks "Examine(it)" (فانظر).

This can be seen in the following quotation:

اذان الفأر : ابو جريج ـــ: تحمر الجلد اذا وضعت عليه ، و ينفع من اللقوة متى استعط به.

لي : قد اجمع الاطباء على نفع هذه للقوة ، وان كان يحمر الجلد فليس ببارد، فانظر في ذلك.

(Mouse-ear: Abu Juraij: It reddens the skin when it is put on it, and it is beneficial against hemiatrophy if it is snuffed up.

My comment: The physicians have agreed unanimously on the benefit of this for hemiatrophy, and (on the fact that) if it reddens the skin it is not cold. **Examine that.**) (al-Rāzī, vol.XX, 1955-70; p.69 n.82).

In our text we can see various effects of the drugs introduced. Among them there are those that can be designated as *muḥallil* (loosening), *mufattiḥ* (opening), *muskhī* (relaxing), *kāsir al-riyāh* (wind breaking), *muqaṭṭiʿ* (cutting off), *jādhib* (pulling), *muḥriq* (caustic), *kāwī* (burning), *mubarrid* (cooling), *mukhaddir* (narcotic), *muraṭṭib* (moistening), *munaffikh* (making odorous), *mujaffif* (desiccative), *qābiḍ* (astringent), etc. Many more terms of the effects of drugs can be traced in *al-Ḥāwī* and other Arabic medical works (see al-Rāzī, 1955-70, vol.XX and XXI; Lippert, "Adwiya", *Encyclopedia of Islam*[1]).

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1. Lippert gives forty one. Other then we have mentioned above are *mulaṭṭif* (rarifying), *jālī* (polishing), *mukhashshin* (making rough), *munḍij* (digestive), *hāḍim* (purgative), *lādhiʿ* (biting), *muḥammir* (epispastic, a vesicant), *muḥakkik* (a stimulant), *muqarriḥ* (ulcerating), *akkāl* (consuming), *mufattit* (wiping off, removing roughness), *muʿaffin* (putrefying), *qāshir* (wiping off hard), *muqawwī* (fortifying), *rādiʿ* (repellent), *mughalliẓ* (incrassative) - the opposite of *mulaṭṭif*, *mufḥij* (repellent), *ghassāl* (washer, polisher), *muwassikh li al-qurūḥ* (making the ulcers filthy), *mazzāq* (tearing), *mumallis* (emollient), *ʿāṣir* (compressing), *musaddid* (constipating), *mughrī* (agglutinant), *mudmil* (cicatrizing), *munbit li al-laḥm* (making flesh grow) and *khātim* (covering).

Among the modes of administering drugs in our text are gargles, ointments, infusions, decoctions, snuffs, pills, suppositories, enemas, pills, inhalations, etc., which were known by the ancient Mesopotamians, Egyptians, Indians, Persians and Greeks.

Honey is one of the most popular drugs used by all these ancient nations. This popularity can be noticed in our text, where it is occasionally suggested. It is applied in a simple form, or as hydromel and oxymel. These two latter forms were always used by Greek physicians. Oxymel also was well-known among the ancient Persians. Another popular remedy is the Greek *hiera*, especially *hiera picra* of Galen. Later, all of these became generally used among the Arabs.

Some foreign terms can be clearly seen. Among them are سرسام (meningitis) which was derived from the Persian سر (head) and سام (inflammation); قاطوخس (catochus) from the Greek κατοχή; ليثرغس (lethargus) from λέθαργος; and, فالج (hemiplegia) from Πληγή. The Greek technical terms are rendered with fair success. For example, δυσκρασία (dyscrasia - δύς, bad + κρασίς, a mixing) was rendered by سوء المزاج which literally means 'the bad mixture or temperament'. These new terms enriched the native medical terminology which the Arabs already possessed, such as صداع (headache), دوّار (vertigo), جذام (elephantiasis), etc.

Another clear example of the transmission of medical, especially pharmacological, ideas can be studied from the names of drugs, which will be detailed in the next discussion.

DRUGS'*: NOTES AND REFERENCE[2]*

- (Pimpernel) ابو غالس (95.20)[3]*, or ابى غليس (100.6)[3]*, or انا غاليس in ~~the text of~~ *al-Ḥāwī* (al-Rāzī, vol.XX, 1955-1970: p.116, no.136), is ابا غلس in al-Bīrūnī's *al-Ṣaidanah* (Hamarneh, 1973: 67), انا غالس in Al-Isrā'īlī's *Sharḥ Asmā' al-ᶜUqqār* (1940: p. 5 no.16) and Ibn al-Baiṭār's *al-Jāmiᶜ al-Mufradāt* (vol.I, 1967: 62), and اناغاليس in *Tuḥfat al-Aḥbāb* (ed.Renaud and Colin, 1934: p.4 no.8 [4]*). It is a transliteration from the Greek ἀναγαλλίς, which is mentioned by Dioscorides (Renaud and Colin, 1934: p.8 no.8 [5]*) and Paulus (Adams, vol.III, 1847: 43). It is said that this Greek was transliterated into Arabic by Ḥunain b. Isḥāq (Rosner, 1979: 14). According to Maimonides (Al-Isrā'īlī), it is also called اذان الفأر (mouse-ear), which is also signifies مرزنجوش (sweet marjoram - see below).

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1. Drugs which are mentioned in our selected text of *al-Ḥāwī* (chapters IV & V, vol.I: see the translation in pp. 97-144 and the Arabic text in pp. 150-166) .

2. The drugs in our text are compared with those in other texts (including *al-Ḥāwī*, vols. XX, XXI & XXII) where the various forms of the names of the drugs are given.

3. Reference to our text. '(95.20)' should be read "page 95, line 20". This is the place where the drug in question is first mentioned in the text.

4. Reference to the original text of *Tuḥfat al-Aḥbāb*, in the edition of Renaud and Colin (1934).

5. Reference to the account of the editors, Renaud and Colin.

- (Citron) أُتْرُج (99.9; al-Rāzī, vol. XX, 1955-70: p.27 n.34; al-Isrā'īlī, 1940: p.4 no.1; Ibn al-Baiṭār, vol.I, 1967: p.10; *Tuḥfat al-Aḥbāb*, 1934: p.7 no.21). It derives from the Persian تُرُنْج 'an orange' (Steingass, *A Comprehensive Persian-English Dictionary*; see also *Tuḥfat al-Aḥbāb, Ibid.*, and Rosner, 1979: 4).

- (Schoenus, or the bog-rush) إِذْخِر (100.17; al-Rāzī, vol. XX, 1955-70: p. 6 no. 9; al-Isrā'īlī, 1940: p.5 no.8; Ibn al-Baiṭār, vol.I, 1967: p.15; *Tuḥfat al-Aḥbāb*, 1934: p.7 no.34). It is also known as تبن مكة ('straw of Mecca') (al-Isra'īlī, *Ibid.*) and ادخير (*Tuḥfat al-Aḥbāb, Ibid*) ; اذخر ('the bog-rush') is an Arabic name (Steingass).

- (Lavender stoechas) أُسْطُوخُودُوس (92.3; al-Isrā'īlī, 1940: p. 4 no.6; Steingass); اسطوخوذوس (al-Rāzī, vol. XX, 1955-70: p.124 n.139; Ibn al-Baiṭār, vol.I, 1967: p.24); اسطوخدس (*Tuḥfat al-Aḥbāb*, 1934: p.5 n.13). It is the transcription of the Greek στοιχάς-άδος (Renaud and Colin, 1934: 10 no.13).

- (Dodder) افتيمون (89.21; al-Rāzī, vol. XX, 1955-70: p.51, n.54; Ibn al-Baiṭār, vol.I, 1967: p.40); افيثمون (al-Isrā'īlī, 1940: p.6 no.23; *Tuḥfat al-Aḥbāb*, 1934: p.6 n.32). It is from the Greek (Dioscorides) ἐπίθυμον (Renaud and Colin, 1934: 17 n.17).

- (Euphorbium) افربيون (92.5; al-Rāzī, vol. XXI, 1955-70: p.229 n.605; al-Isrā'īlī, 1940: p.6 no.25); فربيون (97.11);

Tuḥfat al-Aḥbāb, 1934: p.33, no.323). It is from the Greek *euphórbion* (Rosner, 1979: 20).

- (Absinth) افسنتين (101.2; al-Rāzī, vol. XX, 1955-70: p.118 n.138; al-Isrā'īlī, 1940: p.4 no.3; Ibn al-Baiṭār, vol.I, 1967: p.41). It is the Arabic transcription of the Greek [Dioscorides] ἀψίνθιον (Renaud and Colin, 1934:4 no.1; Adams, III, 1847:63), passed through the Aramaic (Rosner, 1979:5).

- (Opium) افيون (98.1; al-Rāzī, vol. XX, 1955-70: p.5 n.7; al-Isrā'īlī, 1940: p.7 no.35; Ibn al-Baiṭār, vol.I, 1967: p.45; *Tuḥfat al-Aḥbāb*, 1934: p.7 n.40). It derives from the Greek ὄπιον (Renaud and Colin, 1934: 20 no.40).

- (Anakardia, or oriental cashew nut) انقرويا (91.15); انقرذيا (al-Isrā'īlī, 1940: p.10 no.62)); انفرديا (Ibn al-Baiṭār, vol.I, 1967: p.66). 'Anakardia' is a Greek name, but it is not ancient Greek - it was unknown to Dioscorides - but Byzantine (Rosner, 1979: 50). According to Al-Isrā'īlī (*Ibid.*), Ibn al-Baiṭār (*Ibid.*) and Steingass it is same with the Indian بلادر (oriental cashew nut - see below).

- (Myrobalan) اهليلج (90.16; al-Rāzī, vol. XXI, 1955-70: p.636, n.898) and هليج (93.8; see also Renaud and Colin, 1934, 58 no.126); هليلج (al-Isrā'īlī, 1940: p.14 n.112; *Tuḥfat al-Aḥbāb*, 1934: p.14: 126). It is the Persian هليله [the myrobalan or citron-tree] (Steingass), which derived from the

Sanskrit *haritāki*. It was unknown to the Greeks. (Rosner, 1979: 82).

- (Blue iris) ايرسا (96.9; al-Rāzī, vol. XX, 1955-70: p.3 n.3; al-Isrā'īlī, 1940: p.7 no.34; Ibn al-Baiṭār, vol.I, 1967: p.71; *Tuḥfat al-Aḥbāb*, 1934: p.6 n.28). It is from the Greek [Dioscordes] ἴρις (Renaud and Colin, 1934: 16 no.28), which probably passed through Aramaic. In the Jewish-Aramaic dialect of Palestine, one said *Īrūsa* (Rosner, 1979: 26).

- (Large basil) بَادْرُوْج (99.14), or باذروج (al-Rāzī, vol. XX, 1955-70: p.167 n.169; al-Isrā'īlī, 1940: p.8 no.48; Ibn al-Baiṭār, vol.I, 1967: p.76). It is Persian. This is the Persian باد روج ['a fragrant kind of herb'] or باد روز ['sweet basil'] (Steingass).

- (Bean) باقلا (92.14; al-Isrā'īlī, 1940: p.8 no.41); باقلى (al-Rāzī, vol. XX, 1955-70: p.149 n.154); باقلاء (*Tuḥfat al-Aḥbāb*, 1934: p.10 n.76). It sigifies فول (al-Isrā'īlī, *Ibid.*; *Tuḥfat al-Aḥbāb*, *Ibid.*). *Bāqillā* is a Nabatean name (Renaud and Colin, 1934: 35 no.76).

- (Cyclamen, etc.) بخور مريم (96.16; Ibn al-Baiṭār, vol.I, 1967: p.84; *Tuḥfat al-Aḥbāb*, 1934: p.11 n.89). The Arabs designate about ten plants with this drug. Among its English names are Motherwort, marigold, sowbread, cyclamen, etc. (see Rosner, 1979: 42; Mattock, 1968: 19). It is called in Africa as خبزالمشايخ and

the populations of *al-Shām* call it الركف (Ibn al-Baitar, *Ibid.*). Cf. Lane: بخور مريم [Arthanita, or sow-bread; the common cyclamen]; also called الوَلْف by Syrians.

- (Onion) بصل (91.14; al-Isrā'īlī, 1940: p.10 n.61; Ibn al-Baiṭār, vol.I, 1967: p.96). It is an Arabic name (Steingass).

- (Borax) بورق (97.11; al-Rāzī, vol. XX, 1955-70: p.134 n.147; al-Isrā'īlī, 1940: p.9 n.51; Ibn al-Baiṭār, vol.I, 1967: p.125; *Tuḥfat al-Aḥbāb*, 1934: p.11 n.92). The name is derived from the Persian بُوْرَ [borax, nitre] (Steingass; see also Rosner, 1979: 39). بورق ارمنی [Armenian borax] is the best type of borax (al-Isrā'īlī, *Ibid.*; Lane).

- (Oriental cashew nut) بلادر (90.17); بلاذر (al-Rāzī, vol. XX, 1955-70: p.133 n.146; al-Isrā'īlī, 1940: p.10 no.52; Ibn al-Baiṭār, vol.I, 1967: p.113). The Persian is بلادور [anacardia] (Steingass), which derives from the Sanskrit *bhallatamu* or *bhallātaka* (Rosner, 1979: 50).

- (Anacardium electuary) بلادری (90.20; Steingass)

- (Balsam) بلسان (96.2; al-Rāzī, vol. XXII, 1955-70: p.12; Ibn al-Baiṭār, vol.I, 1967: p.107; Lane). It is an Arabic name (Steingass), which derives from the Akkadian *bašmu* (Levey, 1966: 245).

- (Hazelnut) بندق (91.11; al-Isrā'īlī, 1940: p.8 no.43; Ibn al-Baiṭār, vol.I, 1967: p.1967: 119). It is also called جِلَوْز: Some people say that بندق is Persian, جلوز is Arabic (see Ibn al-Baiṭār, *Ibid.*). According to Steingass, جلوز [filbert nut] is Arabic, but بندق is an Arabic element combined with the Persian. Others say that بندق is from the Greek πονικός (Renaud and Colin, 1934: 30 no.64; Rosner, 1979: 33).

- (Violets) بَنَفْسَج (98.18; Ibn al-Baiṭār, vol.I, 1967: p.114; *Tuḥfat al-Aḥbāb*, 1934: p.9 n.63). It is a Persian word (Steingass).

- (Thapsia) ثافسيا (92.5; al-Rāzī, vol. XX, 1955-70: p. 222 n. 194; Ibn al-Baiṭār, vol.I, 1967: p.148); تافسيا (al-Isrā'īlī, 1940: p.40 n.380; *Tuḥfat al-Aḥbāb*, 1934: p. 41 n.404). It is سذاب برى [wild rue] itself (al-Isrā'īlī, *Ibid.*), which also signifies سذاب جبلى (*Tuḥfat al-Aḥbāb*, *Ibid.*), or its raisin (al-Isrā'īlī, *Ibid.*). 'Thapsia' is from the Greek [Dioscorides] θαψία (Renaud and Colin, 174 n.404), which passed through Syriac (Rosner, 187 & 271).

- (Garlic) ثوم (95.2; al-Rāzī, vol. XX, 1955-70: p.214 n.196; Ibn al-Baiṭār, vol.I, 1967: p. 151; *Tuḥfat al-Aḥbāb*, 1934: p.42 n.408). This is an Arabic name (Steingass), which probably comes from the Akkadian *šūmmu* (Levey, 1966: 251).

- (Opopanax) جاوشير (98.3; al-Rāzī, vol. XX, 1955-70: p. 238 n.203; al-Isrā'īlī, 1940: p.11 no.76; Ibn al-Baiṭār, vol.I, 1967: p.154); جوشير (*Tuḥfat al-Aḥbāb*, 1934: p.13 n.108). جاوشير is from the Persian گاوشير (Steingass).

- (Nutmeg) جوز بوا (92.6; al-Isrā'īlī, 1940: p.11 no.71; Ibn al-Baiṭār, vol.I, 1967: p. 175; *Tuḥfat al-Aḥbāb*, 1934: p.12 n.98). It is from the Persian گوز [nut] and بُوْیَ [odour, fragrance, perfume] (Steingass). The Greeks did not mention this drug, save during the Byzantine epoch. Occidental Europe did not know of it until the late 18th AD (Rosner, 1979: 57).

- (Castoreum) جند بيد ستر (91.13) and جند باد ستر (92.3; al-Rāzī, vol. XX, 1955-70: p. 259 n.214; al-Isrā'īlī, 1940: p.12 no.79; *Tuḥfat al-Aḥbāb*, 1934: p.13 no.103). It is the Persian جند بيد ستر ['the testicles of a beaver'] (Steingass; see also Rosner, 1979: 62; Renaud and Colin, 1934: 48 n.103; Levey, 1966: 254)

- ('Black seed') حبة سوداء (98.19; al-Isrā'īlī, 1940: p.20 n.167). It signifies black cumin, nutmeg-flower, small fennel-flower, bastard nigella, nigella (شونيز), etc. (Hamarneh, 1973: 87; Rosner, 1979: 120; al-Rawi and Chakravarty, 1964: 69).

- (Cress) حرف (97.11; al-Rāzī, vol. XX, 1955-70: p. 319 n.235; Ibn al-Baitar, vol.II, 1967: p.15; *Tuḥfat al-Aḥbāb*, 1934:

p. 18 n.167). It is the Arabic name from al-Ḥijāz (Renaud and Colin, 1934: 76 no.167).

- (Harmal) حرمل (98.6; al-Rāzī, vol. XX, 1955-70: p. 325 n.237; al-Isrā'īlī, 1940: p.19 no.160; Ibn al-Baiṭār, vol.II, 1967: p. 14; *Tuḥfat al-Aḥbāb*, 1934: p.19, no. 176). Steingass identifies it as 'seed of wild rue'. Other authorities give 'harmal or wild rue' (Renaud and Colin, 1934: 80 n.176; Levey, 1966: 258; Rosner, 1979: 116). It was used by Babylonians, but حرمل is probably the Syriac *ʾarmēlā* (Levey).

- (Lycium juice) حُضَض (98.2; al-Rāzī, vol. XX, 1955-70: p.315 n.234; Ibn al-Baiṭār, vol.II, 1967: p.23). According to Steingass it is the Arabic name. This Arabic equivalent was said to be chosen by Ḥunain for the Greek [Dioscorides] λύκιον. It was an Indian medicament. (Renaud and Colin, 1934: 76 no.166; Rosner, 1979: 107). However, it may also have been used by Sumerians and Babylonians (see Levey, 1966: 259).

- (Asafoetida) حلتيت (98.2; al-Rāzī, vol. XX, 1955-70: p. 300 n.223; al-Isrā'īlī, 1940: p.6 n.18 & p.7 n.31; Ibn al-Baiṭār, vol.II, 1967: p. 27; *Tuḥfat al-Aḥbāb*, 1934: p. 19 no.169. It was used by the Sumerians and the Babylonians. In Akkadian it was called *ḫattireʾi* (Levey, 1966: 260).

- (Colocynth) حنظل (97.7; al-Rāzī, vol. XX, 1955-70: p. 340 n.254; al-Isrā'īlī, 1940: p. 19 n.158, 36 n.332; Ibn al-Baiṭār,

vol.II, 1967: p. 36; *Tuḥfat al-Aḥbāb*, 1934: p.19 no.178). This is an Arabic name (Steingass). It was used by the Sumerians, the Babylonians and the Egyptians (Levey, 1966: 262).

- (Hellebore) خريق (97.4; al-Rāzī, vol. XX, 1955-70: p. 437 n.323; al-Isrā'īlī, 1940: p. 42 n.399; Ibn al-Baiṭār, vol.II, 1967: p. 54; *Tuḥfat al-Aḥbāb*, 1934: p. 43 n.425). In Akkadian it was called *qarbuḫu* (Levey, 1966: 263), and in Syriac *hūrbaknā* or *hūrbekānā* (Rosner, 1979: 286).

- (Mustard) خردل (86.12; al-Rāzī, vol. XX, 1955-70: p. 383 n.291; al-Isrā'īlī, 1940: p. 42 n.400; Ibn al-Baiṭār, vol.II, 1967: p. 52; *Tuḥfat al-Aḥbāb*, 1934: p. 43 n. 417). By Sumerians it was called as *ḫar.ḫar*, by Babylonians *haldappânu* (Levey, 1966: 264). In Assyrian it was known as *hardinnu* and in Syriac *hardēlā* (Rosner, 1979: 287).

- (Lettuce) خس (95.2; al-Rāzī, vol. XX, 1955-70: p. 430 n.321; Ibn al-Baiṭār, vol.II, 1967: p.58). This an Arabic name (Steingass).

- (Poppy) خشخاش (95.2; al-Rāzī, vol. XX, 1955-70: p. 401 n.305; al-Isrā'īlī, 1940: p.42 n.401; Ibn al-Baiṭār, vol.II, 1967: p. 59; *Tuḥfat al-Aḥbāb*, 1934: p.43 n.414). It is an Arabic name (Steingass).

- (Marsh-mallow) خطمی (99.8; al-Rāzī, vol. XX, 1955-70: p.398 n.304; al-Isrā'īlī, 1940: p. 41 n.390; Ibn al-Baiṭār, vol.II, 1967: p. 63). This is an Arabic-Persian name (Steingass).

- (Gilly-flower) خیری (92.7; al-Rāzī, vol. XX, 1955-70: p.392 n.301; Ibn al-Baiṭār, vol.II, 1967: p.82; *Tuḥfat al-Aḥbāb*, 1934: p. 43 n.422). It is a Persian name (Steingass).

- (Elecampane) راسن (100.18; al-Isra'ili, 1940: p.38 n. 353; Ibn al-Baiṭār, vol.II, 1967: p. 128). It is a Persian name (Ibn al-Baiṭār, *Ibid.*; Steingass). It is also called زنجبیل شامی [Syrian ginger] (al-Isrā'īlī, *Ibid.*). (see also Rosner, 1979: 248).

- (Saffron) زعفران (90.1; al-Rāzī, vol. XX, 1955-70: p. 548 n.385; al-Isrā'īlī, 1940: p.17 n.135; Ibn al-Baiṭār, vol.II, 1967: p. 162; *Tuḥfat al-Aḥbāb*, 1934: p. 17 .151). This is an Arabic name (Steingass). In Akkadian it was called *azupirānu* (Levey, 1966: 275).

- (Ginger) زنجبیل (90.16; al-Rāzī, vol. XX, 1955-70: p. 569 n.391; *Tuḥfat al-Aḥbāb*, 1934: p.16 n.143). This is called in the Greek [Dioscorides] ζιγγίβερις, Pāli *singivera*, Sankrit *śriṅgavera*, Persian شنکلیل (Renaud and Colin, 1934: 64 n.143).

- (Hyssop) زوفا يابس (101.4; al-Rāzī, vol. XX, 1955-70: p. 592 n.396; al-Isrā'īlī, 1940: p. 17 n.136; Ibn al-Baiṭār, vol.II, 1967: p. 172; *Tuḥfat al-Aḥbāb*, 1934: p. 16 n.141). This is an Arabic name (Steingass). The Akkadian was *zūpu* (Levey, 1966: 277).

- (Rue) سُداب (98.5; al-Rāzī, vol. XX, 1955-70: p.71 n.481); سذاب (al-Isrā'īlī, 1940: p. 30 n.279; Tuḥfat al-Aḥbāb, 1934: p. 37 n.364). This is an Arabic name (Steingass). Cf. Lane: " سذاب [rue], said to be an arabicized word, because it is asserted that س and ذ are not combined in any Arabic word, but in some of the books on plants it is written سداب ".

- (Galingale) سعد (90.16; al-Rāzī, vol. XXI, 1955-70: p.1 n.415; *Tuḥfat al-Aḥbāb*, 1934: p.30 n.274; Ibn al-Baiṭār, vol.III, 1967: p.15). It is from the Syriac *se'dē* (Rosner, 1979: 183).

- (Oxymel) سَكَنْجُبِين (100.7; *Tuḥfat al-Aḥbāb*, 1934: p. 41 n.400). It is originally from the Persian سركنگبين ['vinegar and honey') (Steingass), which exactly corresponds to the Greek ὀξύμελι (Levey, 1966: 284). However, we can see several kinds of oxymel, prepared from different ingredients: 'sugar oxymel' (see Greenhill, 1848: 41), 'acid oxymel' (Jones 1923: 111) and 'honey oxymel' (in our selected text).

- (Beet) سلق (96.9; al-Rāzī, vol. XXI, 1955-70: p. 62 n.473; *Tuḥfat al-Aḥbāb*, 1934: p. 39 n.377). The Akkadian was

Silqa, from which the Arabic and the Greek σικελός may be derived (Levey, 1966: 284; see also Renaud and Colin, 1934: 164 n.377).

- (Licorice) سوس (101.3; al-Rāzī, vol. XXI, 1955-70: p.69 n.471; al-Isrā'īlī, 1940: p. 29 n.271; Ibn al-Baiṭār, vol.III, 1967: p. 42; *Tuḥfat al-Aḥbāb*, 1934: p. 39 n.375). It derives from the Akkadian *shūshu*, the Hebrew and Syriac *šūšā* (Levey, 1966: 288; Rosner, 1979: 181).

- (Lily) سوسن (92.8; al-Rāzī, vol. XXI, 1955-70: p. 13 n.431; al-Isrā'īlī, 1940: p. 29 n.272). It derives from the Aramaic *sosanta*, Coptic *šōšen* (Levey, 1966: 289; Rosner, 1979: 182).

- (Blue lily) سوسن اسمانجونی (100.10; al-Isrā'īlī, 1940: p.29 n.272). اسمانجونی in Persian means 'a sapphire, hyacinth'. It may also derive from the Persian آسمان [heaven] and گون [colour] (Steingass; see also Rosner, 1979: 26 & 182). Cf. al-Rāzī (vol. XX, 1955-70: p.116) writes,

اناغاليس: انه صنفان : احد هما زهره الاحمر و الآخر اسمانجونی •

- (Sumac) سمّاق (96.20; al-Rāzī, vol. XXI, 1955-70: p. 26 n.435; al-Isrā'īlī, 1940: p.30 n.277; Ibn al-Baiṭār, vol.III, 1967: p. 29; *Tuḥfat al-Aḥbāb*, 1934: p. 38 n.368). It is either from the Aramaic *summāqā*, meaning 'red' (Rosner, 1979: 185 n.277), or the Persian سماقیل or سُمّاك [sumach] (Steingass).

- (Fleabane elecampane) شابانك (97.20; al-Rāzī, vol. XXI, 1955-70: p.118 n.502; شهمانج or شاهبانج (al-Isra'ili, 1940: p. 40 n.375). It is from the Persian شاهبانج [a hard Egyptian tree] or شاه بانك [a sort of medicinal plant] (Steingass). (see also Rosner, 1979: 266).

- (Nigella, etc.) شونيز (97.16; al-Isrā'īlī, 1940: p. 39 n.365; Ibn al-Baiṭār, vol.III, 1967: p.72; *Tuḥfat al-Aḥbāb*, 1934: p. 47). The Persians also say شونيز [sesame; coriander; pepper] (Steingass). It is also called كمون اسود [black cumin] and حبة سوداء [black seed] (al-Isrā'īlī, *Ibid.*; Ibn al-Baiṭār, *Ibid.*; *Tuḥfat al-Aḥbāb*, *Ibid.*).

- (Wormwood) شيح (99.9; al-Rāzī, vol. XXI, 1955-70: p. 106 n.494; Ibn al-Baiṭār, vol.III, 1967: p. 75; *Tuḥfat al-Aḥbāb*, 1934: p.47 n.456). This Arabic name (Steingass) probably derives from the Akkadian *sīḫu* (Levey, 1966: 296).

- (Aloe) صبر (97.6; al-Rāzī, vol. XXI, 1955-70: p. 142 n.517; al-Isrā'īlī, 1940: p.34 n.318; Ibn al-Baiṭār, vol.III, 1967: p. 77). This name is Arabic (Steingass). In Akkadian one said *ṣiburu* (Levey, 1966: 297).

- (Thyme) صعتر (98.10; al-Rāzī, vol. XXI, 1955-70: p. 147 n.518; al-Isrā'īlī, 1940: p. 34 n.319; *Tuḥfat al-Aḥbāb*, 1934: p. 31 n.299). In Aramaic it was called *satrā* (Rosner, 1979: 218), and in Akkadian *zateru* (Levey, 1966: 297)

- (Feverfew) عاقر قرحا (98.9; al-Rāzī, vol. XXI, 1955-70: p.191 n.558; al-Isrā'īlī, 1940: p.32 n.299; Ibn al-Baiṭār, vol.III, 1967: p. 115; *Tuḥfat al-Aḥbāb*, 1934: p.31 n.301). The name is Aramaic (Ibn al-Baiṭār, *Ibid.*; Renaud and Colin, 1934: 134 n.301).

- (Lentil) عدس (92.15; al-Rāzī, vol. XXI, 1955-70: p. 188 n.557; Ibn al-Baiṭār, vol.III, 1967: p.117). This Arabic name (Steingass). It was used by ancient Sumerians, Babylonians and Egyptians (Levey, 1966: 302).

- ('Resin of the Nabateans') علك الانباط (101.3; al-Isrā'īlī, 1940: p.32 n.301; *Tuḥfat al-Aḥbāb*, 1934: p. 33 n.317). It is the gum of فستق (pistachio) plant (al-Isrā'īlī, *Ibid.*).

- (Mustard-seed, or wild rue, or black-vine) فاشرسين (101.20); فاشرستين (al-Rāzī, vol. XXI, 1955-70: p. 222, n.592); فاشرشين (al-Isrā'īlī, 1940: p. 34 n.313). Cf. The Syriac فاشرستين signifies 'black vine' and فاشرسين 'mustard-seed; wild rue'" (Steingass). It is the transcription of the Syriac *faser astin*, which signifies 'black-vine' (Rosner, 1979: 212).

- (Radish) فجل (93.1; al-Rāzī, vol. XXI, 1955-70: p. 218 n.590; al-Isrā'īlī, 1940: p. 25 n.217). فُجُل , or فُجْل is Arabic (Steingass).

- (Pepper) فلفل (90.15; al-Rāzī, vol. XXI, 1955-70: p. 235 n.618; al-Isrā'īlī, 1940: p. 34 n.310; Ibn al-Baiṭār, vol.III, 1967: p. 166). It is probably from the Sanskrit *pippali* (see Kirtikar, II, 1918: 1090; Rosner, 1979: 210.)

- (Sweet basil) فلنجمشك (96.14; al-Rāzī, vol. XXI, 1955-70: p. 216 n.585); فلنجمشك and برنجمشك (al-Isrā'īlī, 1940: p. 8 n.47; فلنجمشك , برنجمشك , فرنجمشك and افلنجمشك (Ibn al-Baiṭār, vol.III, 1967: p.161). It is the Persian فلنجمشك (Steingass).

- (Mint) فوتنج (97.9; al-Rāzī, vol. XXI, 1955-70: p. 243 n.621); فوذ نج and فوتنج (al-Isrā'īlī, 1940: p. 33 n.309); فوذ نج (Ibn al-Baiṭār, vol.IV, 1967: p.v 181); فود نج (*Tuḥfat al-Aḥbāb*, 1934: p.33 n.325);. It is from the Persian پود نه (Steingass). It has many types. Among them are نهري [fluvial], جبلي [mountain], بري [wild] and بستاني [cultivated] (al-Isrā'īlī, *Ibid.*; Ibn al-Baiṭār, *Ibid.*). (see also نعنع below).

- (Hiera Pikra) فيقرا (97.15), or ايارج فيقرا (101.7; al-Ṭabarī, 1928: 143 & *passim*). It is the Greek ἱερὰ πικρὰ (no.72). It is prepared from these drugs: mastic 6 drachms, crocus 6 drachms, bearded grain 6 drachms, cassia 6 drachms, wild spikenard (hazelwort) 6 drachms, berries of the balsam tree 6 drachms, cinnamon 6 drachms and aloe 12 drachms, which are pounded and administered in a dry powder (Budge, 1913: 50). Some identify

ἱερὰ πικρὰ as an electuary of bitter powdered-mixture of aloe and canellae (white cardamom) (Taylor). Meyerhof (1936: 52) identifies it as "holy bitter remedy".

- (Cardamom) قاقلّة (101.4; al-Rāzī, vol. XXI, 1955-70: p. 304 n.667; Ibn al-Baiṭār, vol.IV, 1967: p. 15 n.116; *Tuḥfat al-Aḥbāb*, 1934: p. 35 n.342). It originates from the Assyrian *qāqūla* (Rosner, 1979: 85; see also Levey, 1966: 314).

- ('Donkey's cucumber', i.e. wild, or squirting cucumber)

قثاء الحمار (95.10; al-Rāzī, vol. XXI, 1955-70: p. 287 n.652; Mattock, 1968: 11.10); قثا الحمار (al-Isrā'īlī, 1940: p. 31 n.292). According to al-Rāzī (*Ibid.*) and al-Isrā'īlī (*Ibid.*), it is قثاء برى [wild cucumber]. It is also called عَلْقَم (al-Isrā'īlī, *Ibid.*). Cf Lane: عَلْقَم is a species of bitter tree or plant; some say the colocynth or its pulp; or قثاء الحمار [the elaterium; the wild, or squirting, cucumber]. قثا is a semitic name: the Assyrian *quiššu*, Hebrew *quiššut* (Rosner, 1979: 239).

- (False sweet flag) قصب الذريرة (99.18; al-Rāzī, vol. XXI, 1955-70: p. 264, n.632; al-Isrā'īlī, 1940: p. 36 n.329; *Tuḥfat al-Aḥbāb*, 1934: p.36 n.349). It signifies 'perfumed reed' and corresponds to Dioscorides' κάλαμος ἀρωματικός (Renaud and Colin, 1934: 152 n.349).

- (Copperas) قَلْقَنْد (96.16; al-Isrā'īlī, 1940: p. 17 n.140).

قلقند , or قَلقَنْت , is also called زاج (al-Isrā'īlī, *Ibid.*). The former is from the Greek χαλκανθον, and the latter is purely Persian (Steingass).

- (Camphor) كافور (97.16; al-Rāzī, vol. XXI, 1955-70: p. 367 n.726; Ibn al-Baiṭār, vol.IV, 1967: p. 24 n.206; Ibn al-Baiṭār, vol.IV, 1967: p. 42; *Tuḥfat al-Aḥbāb*, 1934: p. 23 n.212). This is an Arabic-Persian name (Steingass), which is derived from the Sanskrit *kappūra* (Rosner, 1979: 142). It is said that this tree is indigenous to China, Japan, Sumatra and Borneo. In Sanskrit it is called *kappūra*, and *kaafur* in Malay (Levey, 1966: 321).

- (Caper-bush) كبر (98.1; al-Rāzī, vol. XXI, 1955-70: p. 353 n.713; al-Isrā'īlī, 1940: p. 23 n.197). It is Arabic (Steingass).

- (Crowfoot) كبيكج (96.4; Ibn al-Baiṭār, vol.IV, 1967: p. 48). This is a Persian name, which probably derives from Indian.

كبيكج in Persian is 'a kind of wild parsley, and deadly poison' (see Steingass).

- (Leek) كُرّاث (92.15; al-Rāzī, vol. XXI, 1955-70: p. 383, n.737; Ibn al-Baiṭār, vol.IV, 1967: p. 23 n.198; Ibn al-Baiṭār, vol.IV, 1967: p. 61 & 65). It is evidently derived from a Semitic name: the Sumerian was *qaraš*; Assyrian *karāšu*; Aramaic *kĕrētī* and *kĕrēšā* (Rosner, 1979: 139).

- (Celery, smallage, parsley) كَرَفْس (96.3; al-Rāzī, vol. XXI, 1955-70: p. 370 n.732; al-Isrā'īlī, 1940: p. 23 n.196; see also Lane; Levey, 1966: 324; Rosner, 1979: 137).

- (Cabbage) كُرُنْب (92.15; al-Rāzī, vol. XXI, 1955-70: p. 377 n.736; al-Isrā'īlī, 1940: p. 22 n.184; Ibn al-Baiṭār, vol.IV, 1967: p.57; *Tuḥfat al-Aḥbāb*, 1934: p. 24 n.224). It derives from the Greek κράμβη of Dioscorides (Renaud and Colin, 1934: 101 n.224; Lane). The cultivation of cabbage appears to have commenced in Italy (Rosner, 1979: 130).

- (Coriander) كُزْبَرَة (92.12; al-Rāzī, vol. XXI, 1955-70: p. 336 n.702; al-Isrā'īlī, 1940: p. 22 n.182; Ibn al-Baiṭār, vol.IV, 1967: p. 66; *Tuḥfat al-Aḥbāb*, 1934: p. 24 n.230). This is an Arabic-Persian name (Steingass), which derives from the Sanskrit *kustumbārī*, the Assyrian *kusibirru*, the Aramaic *kūsbaretā* (Rosner, 1979: 128).

- (Cumin) كمون (97.8; al-Rāzī, vol. XXI, 1955-70: p. 332 n.700; al-Isrā'īlī, 1940: p. 23 n.193; Ibn al-Baiṭār, vol.IV, 1967: p. 81; *Tuḥfat al-Aḥbāb*, 1934: p. 24 n.229). The Assyrian is *kamūnu* and Aramaic *kammōnā* (Rosner, 1979: 135), which passed to the Greek κύμινον (Renaud and Colin, 1934: 103 n.229).

- (Frankincense) كندر (90.9; al-Rāzī, vol. XXI, 1955-70: p. 313 n.688; al-Isrā'īlī, 1940: p.22 n.188; Ibn al-Baiṭār, vol.IV, 1967: p. 83; *Tuḥfat al-Aḥbāb*, 1934: p.23 n.214). It is identified

by all authorities as لبان Some people say that, in Persian, it is called كندر which designates لبان in Arabic. It is also said that both derive from the Greek χόνδρος λιβάνου ("clots of incense"). The Greek λιβάνος is derived from the Semitic; Assyrian *lubanu*, Hebrew *lebona*, Aramaic *lĕbottā*, etc. (see Ibn al-Baiṭār, *Ibid.*; Steingass; Rosner, 1979: 132; Renaud and Colin, 1934: 96 n.214). According to *Tuḥfat al-Aḥbāb* (*Ibid.*), "It is peculiar to the countries of India and *Shām*".

- (Hellebore) كندس (96.3; al-Rāzī, vol. XXI, 1955-70: p. 346 n.704; Ibn al-Baiṭār, vol.IV, 1967: p. 86; *Tuḥfat al-Aḥbāb*, 1934: p.24 n.225). كندس ['a certain root, black without, yellow within, and a sternutatory in medicine'] is Arabic (Steingass). Ibn Baiṭār (*Ibid.*) says that this drug is not at all mentioned by Dioscorides nor by Galen, and that Ḥunain (b Isḥāq) was wrong when he translated the drug سطروثيون (στρούθιον) as كندس (See also Renaud and Colin, 1934: 101 n.225).

- (Bindweed, or ivy) لَبْلاب (96.7; al-Rāzī, vol. XXI, 1955-70: p. 410 n.755; al-Isrā'īlī, 1940: p. 24 n.207; Ibn al-Baiṭār, vol.IV, 1967: p.92; *Tuḥfat al-Aḥbāb*, 1934: p.25 n.240). لبلاب [ivy, bindweed, pellitory] is Arabic (Steingass), which originates from the Syriac *hĕbilbĕlā* (Rosner, 1979: 144).

- (Kidney beans) لوبيا (92.15; al-Rāzī, vol. XXI, 1955-70: p. 474 n.764; al-Isrā'īlī, 1940: p. 24 n.210; Ibn al-Baiṭār, vol.IV, 1967: p. 112; *Tuḥfat al-Aḥbāb*, 1934: p. 5 n.16). In Akkadian it

was called *lubbu* (Levey, 1966: 331), and in Greek λόβος, and passed through Syriac into Arabic لوبيا (see Renaud and Colin, 1934: 11 n.16; Rosner, 1979: 146).

- (Almond) لَوْز (90.11; Ibn al-Baiṭār, vol.IV, 1967: p.111). It is Arabic (Steingass).

- (Celandine) ماميران (96.7; al-Rāzī, vol. XXI, 1955-70: p. 512 n.801; al-Isrā'īlī, 1940: p.27 n.241; *Tuḥfat al-Aḥbāb*, 1934: p.27 n.252). This Persian name is also called بقلة الخطاطيف (al-Isra'īlī, *Ibid.*; *Tuḥfat al-Aḥbāb*, *Ibid.*; see also Steingass).

- (Myrrh) مُر (89.21; al-Rāzī, vol. XXII, 1955-70: p.34; Tuḥfat al-Aḥbāb, 1934: p. 28 n.265). It is a Semitic name: the Akkadian is *murru* (Levey, 1966: 333), Hebrew *môr*, Aramaic *mūrā*, which became the Greek μύρον (Renaud and Colin, 1934: 119 n.265).

- (Sweet marjoram) مرزنجوش (92.6; al-Rāzī, vol. XXI, 1955-70: p. 491 n.783; al-Isrā'īlī, 1940: p. 27 n.236; Ibn al-Baiṭār, vol.IV, 1967: p.144; *Tuḥfat al-Aḥbāb*, 1934: p.27 n.253). This is from the Persian مَرْزَنْگُوش [mouse-ear, white rose] (Steingass). Other Persian names are مرد قوش and مرد د وش In Arabic it is also called اذ ان الفأر , عنقر , سمسق , خرك , حبق الفيل and حبق القثاء (al-Isrā'īlī, *Ibid.*; Ibn al-Baiṭār, *Ibid.*).

- (Garum) مرى (101.16; al-Rāzī, vol. XXI, 1955-70: p. 569 n.834; Ibn al-Baiṭār, vol.IV, 1967: p. 149; *Tuḥfat al-Aḥbāb*, 1934: p.29 n.276). It derives from the Greek ἁλ-μυρίς (Renaud and Colin, 1934: 123 n.276).

- (Musk) مسك (92.6; al-Rāzī, vol. XXI, 1955-70: p. 516 n.821; al-Isrā'īlī, 1940: p. 31 n.290; Ibn al-Baiṭār, vol.IV, 1967: p.155; *Tuḥfat al-Aḥbāb*, 1934: p. 29 n.280, 39 379). It is Arabic (Steingass).

- (Mastic gum) مصطكى (100.17; al-Rāzī, vol. XXI, 1955-70: p. 486 n.782 and p.186 n.555; al-Isrā'īlī, 1940: p. 26 n.232; Ibn al-Baiṭār, vol.IV, 1967: p.158; Tuḥfat al-Aḥbāb, 1934: p. 62 n.251). Another name is علك الروم (al-Isrā'īlī, *Ibid.*; Ibn al-Baiṭār, *Ibid.*; *Tuḥfat al-Aḥbāb*, *Ibid.*). مصطكى is an Arabic-Syriac transcription of the Greek μαστίχη which designates lentisk resin. The principal site of its origin was the island of Chios in the Greek Archipelago Renaud and Colin, 1934: 112 n.251; see also Rosner, 1979: 160). Cf. Mastic (100.17) is a resinous exudate from *Pistacia lentiscus*, a small tree of the Mediterranean shores (Taylor).

- (Rock or fossil salt) ملح اندرانى (101.4); ملح درانى (al-Razi, vol. XXI, 1955-70: p.182). Some believe that the name of *Milḥ Andrānī*, ['rock-salt'] (Meyerhof, 1936: 62-85) or [fossil-salt] (Greenhill, 1848: 157), was derived from Andar, a village near Aleppo, where a very white fossil salt is found.

Some said that it derived from Andarān, a town of Arabia Felix. Others said that it was from a mountain named Darān. (*Ibid.*).

- (Concentrated must) ميفختج (102.4); ميبختج (al-Rāzī, vol. XXI, 1955-70: p. 493 n.786; al-Isrā'īlī, 1940: p. 12 n.84; *Tuḥfat al-Aḥbāb*, 1934: p. 28 n.270). According to Al-Isrā'īlī, it is 'the water of grape' which is cooked until only a quarter of its quantity remains. If the juice is reduced to one third of the quantity the decoction will be called مثلثا , and if to the half it is called جُمهورى (al-Isrā'īlī, *Ibid.*).

ميبختج is from the Persian مى پخته ['wine boiled down to a consistency'] (Steingass).

- (Staphisagria), مَيُوْيَزَج (98.10; al-Rāzī, vol. XXI, 1955-70: p. 519 n.823; al-Isrā'īlī, 1940: p. 19 n.155; Ibn al-Baiṭār, vol. II p. 153 and vol.IV p. 173); ميوفزج (*Tuḥfat al-Aḥbāb*, 1934: p. 27 n.258). It is from the Persian *maywizag*, meaning 'small dry grape' (Renaud and Colin, 1934: 115 n.258), or مِيْوِيْزَه , or مِيْوِيْثَه [convolvulus] (Steingass). It is زبيب برى (Ibn al-Baiṭār, vol.II, 1967: p. 153), which is also called زبيب الجبل and حب الرأس (al-Isrā'īlī, 1940: p.19 n.155; Ibn al-Baiṭār, vol.II p.153 & vol.IV p.173; *Tuḥfat al-Aḥbāb*, 1934: p.27 n.258). * Our text of *al-Ḥāwī* (p.100, line 18) reads حب الراسن ['seed of elecampane'] (see راسن above).

- (Storax) مَيْعَة (89.21; al-Rāzī, vol. XXI, 1955-70: p. 510 n.809; al-Isrā'īlī, 1940: p. 26 n.228; Ibn al-Baiṭār, vol.IV,

1967: p. 171; *Tuḥfat al-Aḥbāb*, 1934: p. 9 n.58, 25 n.238). This is an Arabic name (Steingass). It has two types: سائلة and جامدة (al-Isrā'īlī, *Ibid.*).

- (Natron) نطرون (92.5; al-Rāzī, vol. XXI, 1955-70: p. 617 n.883; al-Isrā'īlī, 1940: p. 9 n.51; Ibn al-Baiṭār, vol. I p.125 & IV p.181); نيطرون (*Tuḥfat al-Aḥbāb*, 1934: p. 11 n.92). This salt can be obtained on the shores of the lakes of Wādi Natrūn in Egypt. The ancient Egyptians designated it by the word *n.t.r.y.*, from which is derived the Greek [Dioscorides] νίτρον, which passed into the Arabic نطرون (Rosner, 1979: 39; Renaud and Colin, 1934: 42 n.92).

- (Mint) نعنع (97.12; al-Rāzī, vol. XXI, 1955-70: p. 555 n.861; al-Isrā'īlī, 1940: p.28 n.256; Ibn al-Baiṭār, vol.IV, 1967: p. IV, 181); نعناع (*Tuḥfat al-Aḥbāb*, 1934: p.30 n.283); نعنا [mint, spear-mint] (Steingass). This is a Turkish name (see Steingass). It is "the generic name of different species of mint" (Rosner, 1979: 173). It is seemingly same thing as فوتنج (see Ibn al-Baiṭār, *Ibid.*, and فوتنج above).

- (Serpolet) نَمَّام (99.9; al-Rāzī, vol. XXI, 1955-70: p. 598 n.862; al-Isrā'īlī, 1940: p. 28 n.255; Ibn al-Baiṭār, vol.IV, 1967: p. 182; *Tuḥfat al-Aḥbāb*, 1934: p. 30 n.282). نمّام [a kind of wild thyme or betony] is an Arabic name (Steingass). It also designates serpolet, peppermint, etc. (see Renaud and Colin, 1934: 126 n.282; Hamarneh, 1973: 103; Rosner, 1979: 173).

- (Sal ammoniac) نوشادر (101.5; al-Rāzī, vol. XXI, 1955-70: p. 600 n.864; Ibn al-Baiṭār, vol.IV, 1967: p. 185). It can be obtained on mountains of India, or made by man. Al-Bīrūnī reports, "In India they (alchemists) collect the manure and dung outside their village in large heaps, burn it, and when cooled and settled they find sal ammoniac". (Hamarneh, 1973: 104). It also can be found on the hills in Khurāsān (Ibn al-Baiṭār, *Ibid.*). According to Steingass, نوشادر is Persian.

- (True sweet rush) وَجّ (90.11; al-Rāzī, vol. XXI, 1955-70: p. 621 n.886; al-Isrā'īlī, 1940: p. 16 n.125; Ibn al-Baiṭār, vol.IV, 1967: p. 188; Tuḥfat al-Aḥbāb, 1934: p. 15 n.129). This Persian name (Rosner, 1979: 90) derives from the Sanskrit vāchā (Kirtikar et all, II, 1918: 1349).

- (Rose) ورد (99.19; al-Rāzī, vol. XXI, 1955-70: p. 626 n.890; al-Isrā'īlī, 1940: p. 15 n.121; Ibn al-Baiṭār, vol.IV, 1967: p.189; *Tuḥfat al-Aḥbāb*, 1934: p. 15 n.137). This is an Arabic name (Steingass).

- (Latex plants) يَتُوع (97.20; al-Rāzī, vol. XXI, 1955-70: p. 647 n.909; al-Isrā'īlī, 1940: p. 21 n. 178, 25 n.215, 39 n.366; Ibn al-Baiṭār, vol.IV, 1967: p.204; 22 n.210). يتوع ['any plant yielding a poisonous milky juice'] is Arabic (Steingass). It is from the Syriac *yattū'ā* (Rosner, 1979: 124).

Translation of the Sample [Chapter 4 and 5 of Volume II of *al-Ḥāwī*]*

The Fourth Chapter: ON THE STRENGTHS OF THE BRAIN. ON INJURY TO THE THREE FACULTIES OF THE SOUL: IMAGINATION, THOUGHT AND MEMORY. WHAT STRENGTHENS THEM AND WHAT IS HARMFUL TO THEM, ALSO TO THE BRAIN AND THE MIND. ON BAD TEMPERAMENT OF THE BRAIN: THIS MATTER IN GENERAL AND OF ITS DECREASE AND INCREASE. THINGS USEFUL AND HARMFUL TO THE MIND AND INTELLECT. THINGS WHICH CORRUPT DREAM[1] AND THINGS WHICH CONDUCE TO MAKING THEM HEALTHY. صفحة ٨٦

The Third [Section] of the *Sick Organs*[2]: He said, "Archigenes[3] treats loss of the memory by application of intense heat, even by cupping and the cure of *mustard*". ١١

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* For the Arabic text see p. 150.

1. I.e. things which cause dream-pain and lethargus. (see p. 117 n. 3 & 4 below).

2. According to al-Rāzī (vol. I, 1955: 9), الاعضاء الآلة (the *Sick Organs*) is Galen's work. This work, which was translated by Ḥubaish, is also entitled تعرف علل الاعضاء الباطنة (*the Diagnosis of Diseases of the Internal Organs*). See p. 34.

3. Archigenes of Apameia was a leading physician at Rome during the reign of Trajan (98-117 AD) (Ibn al-Qifṭī, 1903: 73-74; Sarton, I, 1927: 280).

He said, "When impairment or deficiency of the memory happens, it reveals that there is cold bad temperament in the brain. In this case, the brain must be heated, but it is not absolutely necessary that it should be dried or moistened. But [this is decided] after considering such treatment as has gone before, the [mucous] discharge from the patient's nose, and his sleep. If this has increased, the brain must be dried in addition. If it has decreased, it is moistened. And if it is moderate, it is heated, not dried nor moistened".

"I know a peasant and a philosopher both of whom have been afflicted by deficiency of the memory. They were both successfully treated in the way which has been mentioned. Evidently, they would be harmed by siccative drugs, but benefited by those which are calefacient and humectant".

The Fourth Section [of the *Sick Organs*]: He said, "There are in all three kinds of confusion of the mind[1]:

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1. Confusion of the mind, or delirium, is a condition of extreme mental excitement, usually marked by a rapid succession of confused and unconnected ideas often with illusions and hallucinations (Taylor).

ص ٨٧

Either the sense[1] is damaged while the understanding ١
is sound. For example, a man who sees a dragon on his clothing. It is necessary that there should be visible to him something of this kind which has no reality, but [granted this] his knowledge of it is sound[2]. **And**, like a man who used to hear the sound of flute - players in the vicinity of his house, who are not visible during the day or night[3]".

"**Or**, the sense is sound that he imagines things as ٣
they are in reality, whereas his thought is damaged, this is typical in such as in the case of a man who threw from the roof on to the woollen carpet, [and] all the utensils which were there.

---

1. *Sense*: Feeling, sensation, the faculty of perceiving any stimulus, consciousness (Taylor, *Stedman's Medical Dictionary*). Other meanings of *al-ḥiss* are discussed by Prof. Mattock in the *Encyclopedia of Islam*.

2. Cf. ᶜAlī al-Ṭabarī (1928; 142):

كالرجل يسمع دويا او طنينا و ليس في الهواء دوي ، و يرى بين عينيه شيئا يشبه النار او الذباب ، و يرى الشيء شيئين .

3. Cf. cAlī al-Ṭabarī (1928; 141):

فان كان الداء في مقدم الدماغ - وهو موضع القنطاسيا و الخيال يتخيل له ما كان يتخيل لرجل كان يصيح و يزعم انه يرى في ناحية البيت زمارين و لعابين .

This man's perception is sound for he used to label each one of them by its name and then point to it, but he did not appear to understand that he should not throw them down[1]". **My comment**: "All those who suffer from confusion of the mind are confused with regard to their speech but not with regard to individual names".

"Or, the two [above] are combined". **My Comment**: "This [one] is complicated. [For clear explanation], aid may be sought [by consulting] the Third and its compendium of the *Sick Organs*". ٩

The ~~the~~ Third Treatise of the *Sick Organs*: He said, "Hot bad temperament of the brain is diagnosed by confusion of the mind; and cold bad temperament is diagnosed by the paralysis of psychical functions, and loss of sense and movement, and it is inevitable that [this would be accompanied by] loss of sense and movement; and its dryness would be diagnosed by ١١

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1. Cf. cAlī al-Ṭabarī (1928: 141):

وكان الداء في الجزء الاوسط من الدماغ وهو موضع الفكر اصابه ما اصاب رجلا كان يغلق باب الغرفة على نفسه و يفتح الكوة و يرمى كل شيء في البيت منها الى الناس.

partial insomnia; moistness by lethargy[1]; hotness and dryness by confusion of the mind and partial insomnia; coldness and moistness by the impairment of movement together with lethargy; hotness and moistness by confusion of the mind and somnolence; and, coldness and dryness by the impairment of movement and insomnia".

"If these types [of ailment] have no [accompanying] humour then nothing will flow from the nose, palate, or ear. But if it is [accompanied] by a humour, either bilious or phlegmatic humours will flow". ١٧

He said, "Impairment and deficiency of the memory are always due to coldness [in the brain], except that, if they are attended by lethargy, this reveals that the coldness is also accompanied by moistness, and, if they are attended by partial insomnia, the coldness is accompanied by dryness". ٢٠ ص ٨٨

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1. Lethargy is a state of deep and prolonged unconsciousness, resembling profound slumber, from which the person can be aroused but into which he immediately relapses (Taylor).

ص ٨٨

The First Section of the *Acute Diseases*[1]: He said, "Wine is bad for the mind"[2]. ٢

From the *Encyclopedia* of **Paulus**[3]: He said, "The mind can be sharpened and braced by wakefulness and limiting the regimen, not by sleeping and repleting the stomach"[4]. ٣

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1. *The Acute Diseases* is one of Hippocrates' works. Its original title is Περὶ διαίτης ὀξέων. It was originally three sections, but reached the Arabs together with Galen's commentaries, consisting of five sections. See p. 30.

2. I have not been able to trace this saying precisely in Hippocrates' *Acute Diseases* (see Lyons, 1966; 1-12), or in the commentary, *Acute Diseases in Accordance with the Theories of Hippocrates*, by Galen (see Lyons, 1969; 77-111). In the Third Section of the former (Lyons, 1966; 30-44) there is, however, a considerable discussion of the use of wine and its effect in relation to diet.

3. See page 38.

He said, "People agree that a subtle mind is not produced from a coarse body"[1]. ٥

The *Habits*[2]: He said, "Whoever accustoms himself to commitment to memory will be more able to memorise. Because this [habituation operates] for the mind like sports: whoever makes his body accustomed to sports, becomes stronger at the sports; similarly he who trains same faculty in himself, whatever faculty that may be, to achieve something, it becomes more excellent in the achieving of this". ٦

From the *Strength of the Soul*[3]: He said, "[4]Moistness makes the soul dull, and dryness sharpens it.[4] [5]I have found that nothing makes a human being inferior in degree of understanding to an angel except for moistness, because the soul [of a human being] is closely bound up with a moist element[5]. ١٠

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1. I have not been able to trace this saying precisely in Adam's edition (vol.I 1844, II 1846 & III 1847).

2. This work is probably the *Habits* of Galen, which was translated by Ḥubaish b. al-Ḥasan. See page 33.

3. This is probably Galen's book, the *Strength of Spirit Depends Upon Dispositions of the Body*, which was translated by Ḥubaish b. al-Ḥasan for Muḥammad b Mūsā. See page 36.

4. The original work (Biesterfeldt, 1973; 18) reads:
فان كانت الرطوبة تفعل عدم العقل و اليبوسة تفعل العقل.

5. This saying has not been traced in the original.

He[1] said, "[2]Very thick and very hot blood makes for strength and robustness. Blood which is more fine, and cold makes for more sensibility and understanding"[2]. ١٢

My comment: "It should be examined". ١٤

He said,[1] "[2]A paucity of blood is more helpful for understanding. Consequently, an animal which has no blood becomes more perspicacious than those which have blood; also, that one, among them, which has cold and fine blood is more perspicacious than the opposite; and, the best of all is that one which has hot, thin and pure blood. This one is the best in understanding"[2]. ١٤

My comment: "Here is a contradiction. Examine it". ١٧

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1. "He" refers to Aristotle, not the author, Galen (see Biesterfeldt, 1973 : 24).
2. The original work (Biesterfeldt, 1973; 24) reads:

فانه قال : انّ الدم الكثير الغليظ الكثير الحرارة يفعل القوة و الجلد اكثر ، و الدم الاكثر لطافة الاكثر برودة يفعل الحس و الفهم اكثر. و الحال فيما يقوم لسائر الحيوان مقام الدم كالحال فى الدم. و من اجل ذلك صارت الزنابير وما اشبهها من الحيوان اكثر فهما بالطبع من كثير من الحيوان ذوات الدم ، و من الحيوان ذات الدم ايضا ما كان منها ذا دم بارد لطيف هو افهم ممن هو منها على خلاف ذلك ، و افضلها كلها ما كان منها حار الدم و لطيفه و صافيه ، لان هذه اجود فى النجدة و فى الفهم.

ص٨٨

He said, "An animal whose blood is thinner and finer is more sensitive"[1]. ١٨

The first section of the *Timaeus*[2]: He said, [3]"I directed physicians to limit the regimen, in order that blood would not thicken in the body; because much moisture [which arises from an excess of blood] in the body impairs the understanding. This is very often proved by the fact that whoever has much moisture [in his blood] becomes lazy, dull and somnolent. He is [frequently] attacked by diseases, which ultimately cause the loss of the sense in the mind. If the brain moistens, the mind will go as in the situation with drunkenness"[3]. ١٩ ص٨٩

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1. The orignal (Biesterfeldt,1973; 25) reads:

و الحيوان الذى رطوبته الطف و اصفى هو اسرع حسا ٠

2. *Timaeus* is one of the PLato's major works. It came down to the Arabs in Galen's commentary entitled

كتاب ما ذكره فلاطن فى طيماوس

which was translated by Ḥunain and his son Isḥāq (Ibn al-Nadīm, 1929; 405; Ibn Abī Uṣaibī'ah, 1965; 147).

3. I have not been able to trace this saying in Plato *Timaeus*, Bury's edition (1952; 17-253).

My comment: "Dryness forever makes the soul more vigorous in movement and swifter. What is seen in a person who is predominated by dryness is movements whose measure of rapidity transgresses the natural state of [ordinary] people". ٤

"[The opinion] that dryness is harmful to the mind itself is untrue. Rather dryness always increases it. But, for us, the activities of the soul should be at a limit which is not to be transgressed by the predominant dryness . [The transgression of] this limit can be a stroke [to the soul]. It needs to be treated when it is excessive". ٦

The Sixteenth [Section] of the *Causes and Symptoms*[1]: He said, "A single hot bad temperament in the brain produces melancholia. If it is accompanied by dryness, this [affliction] will be attended by insomnia; [because] insomnia is particularly due to dryness - somnolence to moistness". ١٠

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1. This is probably Galen's *Causes and Symptoms* which was translated by Ḥunain b. Isḥāq. See page 33.

"While a single coldness of the brain produces dullness. If it is accompanied by moistness, it produces severe lethargy". ١٢

"Hot [and] moist temperament produces insomnia alternating with melancholia and lethargy. Whereas cold and dry bad temperament causes the body to want movement, even though [the eyes] remain open. It is catochus[1]". ١٣

The Fifth [Chapter?] of the Sixth [Book?] of the *Epidemics*[2]: He said,[3] "[In the case of] diseases in which thought and memory become weak, it is very beneficial for the patient to observe and understand what afflicts him, or to have recourse to thinking about it. This is a way for regaining the thought"[3]. ١٧

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1. Catochus (Κάτοχη, epilepsy [Galen]) is a mental disease in which the patient is conscious but cannot move or speak (Taylor).

2. The original *Epidemics* were written by Hippocrates. But, it is considered that the **Sixth** Book was not produced by him. See page 30-31.

3. This satement has not been able to be traced in Hippocrates' *Epidemics* (see Adams, vol.I, 1849; 339-420 & Jones,I, 1923; 141-287).

ص ٨٩

The Fifth [Section] of the *Simple Drugs*[1]: He said, ٢٠
"*Dodder, myrrh, liquid storax* and *saffron* are harmful ص ٩٠
for the brain. They cause heaviness in the head and a state like drunkenness. Similarly every type of food which occasions vertigo and heaviness of the head is bad for the brain".

"Things which are bad for the orifice of the ٣
stomach are also bad for the brain".

Al-Yahūdī[2] said, "Among the things that I have ٤
tested, there is nothing better for the confusion of the mind and the cold diseases in the brain generally than that the patient should be given 1 *dāniq*[3] of [the

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1. This is probably Galen's *Simple Drugs*, which was translated by Ḥunain b. Isḥāq. See page 34.

2- Al-Yahūdī is Māsarjawaih or Māsarjīs, is a Jewish physician (See Biographical Index)

3- *Dāniq* is an Arabic unit of weight, equivalent to 1/6 *drachm* (Hāshīm, 1986: 19). See *drachm* below.

hiera[1] of Theodoretus(?)[2], in the morning and the same in the evening, daily, for 30 days. It cures him completely and is also considerable benefit to him against hemiplegia".

1- *Hiera* (the Arabic *Iyārij* - see below), which was derived from the Greek ἱερὰ, is a compound of electuary. There are various *hieras*, such as *hiera* of Rufus, that of Galen, that of Archigenes, that of Theodoretus, etc., which are different according to various ingredients (Al-Rāzī, I: 206 & *passim*; al-Ṭabarī (1928: 148, 151 & *passim*; Adams, III, 500-1; Budge, vol.II, 1913: 48-50).

2- The Arabic text has دانقا من الشباد ريطوس (one *dāniq* of الشباد ريطوس). الشباد ريطوس appears in *Firdaus al-Ḥikmah* (al-Ṭabarī, 1928; *passim*) as الشياد ريطوس. Perhaps, this refers to the Greek Theodoretus (386-458 AD). There is the '*hiera* of Theodoretus' which is used for delirium, vertigo, elephantiasis, etc., (see Budge, vol.II, 1913: 50). I suppose that al-Rāzī intends this medicine. If so, I suggest دانقا من ايارج الشياد ريطوس (one *dāniq of hiera* of Theodoretus) to be the more correct one. Cf. al-Ṭabarī (1928: 151):

ص. ٩

Al-Ṭabarī[1] said, "Some kinds of the impairment of the memory are due to dryness, but most of them are due to moistness". ٨

"It is beneficial for the memory to take 30 (?) *frankincense* and 10 drachms[2] of *pepper, which are pounded and drunk in measures of 1 to 2 mithqāls*[3] on an empty stomach, daily, for 40 days. After that, *true sweet rush* is taken and smeared with ghee, and buried in *barley* for 40 days. A covering of honey, which has also been buried in barley for 20 days, is poured on this compound. ٩

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1. Al-Ṭabarī, ʿAlī b. Sahl b. Rabban, was a physician from Raiy who served al-Muʿtaṣim (833-42), al-Wāthiq (842-47) and al-Mutawakkil (847-61 AD) (Ibn al-Nadīm, 1929; 412; Ibn Abi Uṣaibiʿah, 1965; 414; Meyerhof, 1931; 11; Meyerhof, 1944(b); 1857).

2. *Drachm*, arabised *dirham*, is an unit of weight derived from the Greek δραχμή It is equivalent to about 66½ grains (Dols, 1984; 143; Taylor, 1954; 403).

3. *Mithqāl* is an Arabic weight equal to about 1½ *drachms* (Greenhill 1848; 115).

After that, a portion of [this medicine] is eaten daily. Verily, it is admirable against loss of the memory"[1].

My comment: "*True sweet rush* prepared with honey should be eaten without ghee. This paste is the most profitable for the memory". ١٣

My comment: "[Alternatively], take 50 drachms' weight of *frankincense*, *10 drachms of pepper*, 10 drachms of *true sweet rush*, 20 drachms of *galingale*, 20 drachms of *black myrobalan*, 20 drachms of *ginger* and 10 drachms of the gum of *cashew nut*, and [an amount of] honey equal to the quantity of all the others". ١٥

1- In *Firdaus al-Hikmah* ʿAlī al-Ṭabarī (1928: 151-2) says;

دواء للحفظ و الابردة و تقوية المعدة ، يؤخذ من اللبان صنا و يدق مع وزن عشرة دراهم فلفل و يقتمح منه كل يوم على الريق مثقالا الى ثلثة مثاقيل اربعين يوما ثم تاخذ ما شئت من الوج و تجعله فى جرة خضراء او فى قارورة و تصب عليه من سمن البقر ما يغمره و تدفن فى الشعير ايضا عشرين ليلة و تأكل منه كل يوم قطعة.

ص. ٩

Sharak[1] said, "Coldness renders the mind healthy and the soul good". ١٨

Ahrun[2]: "Treated impairment of the mind in particular, and insomnia and forgetfulness with anacardium electuary especially, and with gargles which clear the phlegm. When this disease - I mean the impairment of the memory - is of long-standing, cauterize him on both the occipital arteries[3] and nape of the neck. For any kind of brain corruptions which are attended by a humour, evacuate that humour, and for that one which is not attended by a humour, confront it with the opposite". ١٨

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1. The Arabic *Sharak*, is identified by all writers as Caraka or Charaka, an ancient Kashmīrī physician, who flourished under the King Kanishka, who reigned probably between 120 and 162 AD (Sarton, vol.I, 1927: 284). Sharak wrote *Caraka-Saṃhitā* see p.39.

2. Ahrun, or Ahrūn, was a christian priest and physician of Alexandria. He lived in the reign of the Emperor Heraclius (610-641 AD) (Greenhill, 1848: 163).

3- The occipital arteries are the two branches of arteries which are distributed upon the occiput, the back of the head.

ص ٩١

My comment: "[Some] brain afflictions are due to the deficiency of its amount [or quantum]. Consequently, the intellect of elderly people decreases, because their brain and marrow decrease. The most complete brain [in amount or quantum] is that of an animal close to the time of birth". ٣

"A symptom of the diseases due to the impairment of the brain is an absence of the signs of bad temperament, and the mind is [abnormally] cheerful[1], such as in very elderly people". ٦

"Among the factors which diminish the brain and the marrow of the bones are fatigue, the light diet in a limited nourishment[2], intercourse and insomnia. Amongst the things whereby it increases are the opposites of these [factors], taking a bath, eating kernels of nuts [or marrow or purest substance of wheat] with sugar and *sweet flummery*[3], and other ٨

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1. This abnormal cheerfulness condition of the mind is Hedonia or Amenomania (Barton and Wells, *A Thesaurus of Medical Words*).

2. Cf. Paulus says, "Excess in diet is a very great error" (Adams, I, 1944; 41).

3. فالوذج [sweet flummery]: Cf. "Sweetmeat made of starch, water and honey (Hava); "This dish includes 'purest substance of wheat' لب الحنطة " (Lane).

similar delicious foodstuffs which are very sustaining, particularly hazelnut and *almond* if they are eaten with sugar".

In his book entitled Cleansing Drugs, **Ibn Māsawaih** said, "Eating *mustard* and anointing the back of the head with it together with castoreum is beneficial in case of forgetfulness". ١٢

He said, "Eating *onion, if it is excessive,* and there is addiction to it damages the intellect and occasions forgetfulness". ١٣

He said, "Prescribe for the amnesiac patient *cashew nut* of which is eaten 1 drachm in hot water on empty stomach daily. Make his meal of the flesh of birds which is dry, light and having little fat such as sparrows, turtle-doves, larks and grouse, and his drink of *hydromel*". ١٤

Ibn Sarābiyūn[1] said, "If the temperament of the ١٨

1- Ibn Sarābiyūn, or Sarāfiyūn, is Yaḥyā b Sarāfiyūn, a Muslim physician and geographer, who flourished in Mesopotamia at the beginning of the tenth century (Sarton, vol.I, 1927: 635).

posterior ventricle of the brain[1] is deficient, the memory will [also] be deficient. If this corruption is due to moistness, it will be attended by lethargy, severe somnolence, and the watering of the nose and mouth, and if not, not".

"If the corruption is due to moistness, you have to prescribe a light regimen and sitting in a place which is lit, in order that [the moisture] will quickly evaporate".

My comment: "It is essential that it be a dry place. Evacuate their [bowels] with a *hiera* and animal fat, together with *castoreum* and *lavender stoechas*, and the like. Then, after much evacuation, give them *cashew nut*, and massage the head until the face reddens. and [give them] *thapsia* [*false fennel*], *castoreum* and *euphorbium*. Massage it [i.e. the head] with old and exquisite oil and natron. Use gargle in his throat. Give them to smell *musk*, *nutmeg* and *sweet marjoram*".

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1 بطون الدماغ (the ventricles of the brain): Cf. Lane (see under صرع) = "the venters of the brain"; Taylor - "ventricle [L. *ventriculus* = **belly**, etc.] is a small cavity. *Cerebral ventricles* are small cavities in the brain, which consist of the lateral ventricle, fourth ventricle, third ventricle and cavity of the septum pellucidum".

"If what corrupts the memory derives from coldness ٧
and dryness, massage the head with *gilly flower* oil and *lily oil*. Give them something to drink and apply a fomentation [to the head]. Make their meals moist and warming. Then, give them wine to drink and administer much fomentation to the head with hot and moistening things".

From the *Medical Problems* of **Aristotle**[1]: He said, ١٠
"Human being is more perceptive than animal because his spirit is subtler".

My comment: "His spirit is subtler because his ١١
blood is subtler".

1- This work is probably كتاب المسائل فى الطب للمتعلمين which was translated by Ḥunain b. Isḥāq (Ibn al-Nadīm, 1929; 410; see also Steinschneider, 1891; 74).

Simples[1]: "The harmful and beneficial [thing] for the mind is *Coriander*". He said, "The excess of it[2] confuses the mind. Therefore, you should avoid excess and addiction to it". ١٢

He said, "*Frankincense*, if it is drunk, is good for the healthy; the broad-bean produces bad dreams[3] on whom eating it; similarly in the case of *lentils* and *cabbage and that of leek*, kidney-beans and *onion*: whoever takes them excessively, they will affect him with lethargus[4]". ١٣

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1. This is probably Galen's *Simple Drugs* (see p.34), as in another place al-Rāzī (vol.I, 1955: 36) writes مفردات جالينوس فى المفردة .

2- Text: منهما possibly in error for منها .

3- 'Bad dream' is probably (i) *lethargus* (see below), or (ii) *hypnalgia* (from the Greek *hypnos* [sleep] + *algos* [pain]), i.e. dream-pain, pain occuring during sleep)(see Taylor), from which احلام ردية probably derives.

4 *Lethargus* is a form of sleeping-sickness (Taylor).

In the *Book of Agriculture*, **Fūbūs**[1]: "The bean weakens the thought and prevents true dreams[2], because it produces much wind". ١٧

Al-Khūz[3] said, "The excess of *onion* corrupts the intellect". ١٩

Ibn Māsawaih said, "*Saffron* is bad for the mind. The excess of it heats the blood. *Frankincense* excessively heats blood, and it is good for the memory. *Radish* makes the senses more delicate, if it is eaten". ٢٠

1- **Fūbūs** cannot be identified with certainty. Perhaps he is Probos, a Syrian Nestorian who flourished about the middle of the fifth century in Antioch and a translator of Greek scientific works into Syriac (Sarton, vol.I, 1927: 382, 400 & 407).

2- 'True dream' is a normal, or usual, or natural, dream, the opposite of 'bad dream' (above).

3- *Al-Khūz* cannot be identified with certainty. There is a certain *al-Khūz*, a Khuzistānī contemporary of Ibn Māsawaih, Ibn Māsah and Ibn Sarābiyūn, and he is described as follows: "A Nestorian Christian physician and natural scientist who came from Jundīshāpūr to Baghdad as many others of **his** race did during the ninth century" (see Hamarneh, 1973: 123). This account shows that *al-Khūz* is a male. But in *al-Hāwī*, قالت is always used to refer to *al-Khūz*, showing that this figure is female(?).

Māsarjawaih[1]: "*Ayūr*(?)[2], a Persian medicine, renders the intellect and the mind clever. It is generally known by this name. It is a Kirmānī medicine the special property of which is to render the mind intelligent". ٢

Al-*Khūz*, Ibn Māsawaih, Abū Juraij[3], **al-*Fihlumān***[4] and **Ibn Māsah** : "The special property of *cashew nut* is to cure forgetfulness. [But], there is some fear for one who drinks it, [as it can occasion] melancholia, and it may even occasion leprosy and elephantiasis. The dose is ½ drachm". ٤

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1. Māsarjawaih is *al-Yahūdī*. See page 108 n.2.

2. This drug has not been identified.

3. Abu Juraij, or Nastās (Anastasius) al-Rāhib, was a tenth-century Egyptian Christian physician-monk. (Hamarneh, 1973; 121).

4. الفهلمان *most* times appears as القهلمان or القلهمان in *al-Ḥāwī* (al-Razi, vol.I, 1955; 84 & *passim*), is an Indian (Meyerhof, 1944a; 1859).

5. Ibn Māsah is ʿĪsā b Māsah al-Baṣrī, who died in 888 AD. He was a Christian physician who practised in Baghdad and wrote some medical works (Hamarneh, 1973; 125).

Al-Khūz said, "The meat of poultry improves the intelligence". ٧

Sharak: "*Black Myrobalan* improves the mind and memory, strengthens the sense, and takes away insomnia and absent-mindedness". ٨

Ibn Māsawaih: "*Ginger* is good for the memory". ١٠

Abū Juraij said, "If 1 *mithqāl* of *frankincense* is cast into water daily and drunk daily, it will improve the memory and mind, and take away severe forgetfulness. On the other hand, it is very hot and produces headaches and excessively heats the blood". ١٠

Māsawaih: "*Frankincense* improves the mind and renders it intelligent". ١٣

Sidihsār[1] said, "*Ginger* sharpens the mind". ١٤

Ibn Māsawaih said, "*Galingale* improves the intelligence". ١٥

1- *Sidihsār, which* frequently appears as *al-Sindihshār in al-Ḥāwī* (see vol.II, and *passim*), is probably *Siddayoga* of Vṛinda - see p. 40.

ص ٩٣

Māsarjawaih: "*Musk* strengthens the brain and preserves it". ١٦

Rufus[1]: "The sawdust (or powder) of *ivory* improves in the preservation of health". ١٧

Galen said, "Wine, if it is excessively [drunk], corrupts the thought and causes it to be dull, defective and turbid". ١٨

Ibn al-Baṭrīq[2], in his book, *On Poisons*: "If ½ drachm of the gum of cashew nut is drunk, it will improve the memory, and if 2 drachms of it is taken, it will be lethal". ص ٩٤

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1. Rufus of Ephesus, who flourished under Trajan in Rome and Egypt, was a Greek anatomist and the greatest Greek physician of the Roman Empire after Galen (Sarton, vol.I, 1927; 282).

2. Ibn al-Baṭrīq was a translator of Greek scientific works. He flourished in the first half of the ninth century in Baghdad (Ibn Abi Uṣaibīʿah, 1965; 282; Ibn al-Qifṭī, 1903; 131; Dodge, 1970; 972).

From Rufus' [1]saying on protection [against forgetfulness][1]: forgetfulness which occurs in a healthy body is a symptom of epilepsy and apoplexy. Therefore, [the patients] should be warmed up, have their heads smeared and hydromel poured on the forehead. It benefits the excellence of digestion, and is good for drunkenness and congestion. The more the South Wind[2] blows is bad for that and dry temperament". ٣

"It [i.e. dry temperament] makes the memory sound, whereas the cold [one] is unsuitable. Consequently, to make it intelligent, slightly heat and dry the temperament by degrees, not too much, lest it would be afflicted. It is not advisable to leave[3] it moist". ٦

1- The text is obscure here. It is possible that a word, or words, has been omitted.

2- الريح الجنوبية is clearly derived from the Greek 'Notos' (South Wind). Greeks believed this wind caused headaches and heaviness of the head, as well as deafness and dimness of vision (Jones, IV, 1931; 86-89).

3- Text corrupt

"But [the heating and drying are done to] a degree whereby this only reduces the excess of the moistness. [This limit must be kept], because when moistness decreases and becomes little in the body, cold temperament will follow that; this is not suitable to men or to children". ٩

"If their temperament is somewhat moist, it helps in the excellence of the memory and prevents the thought from straying and to be assiduous in study, because assiduity in study thins their moisture from their temperament, but their memory is inconstant[1], unlike the memory of men". ١١

"Whoever you want to make intelligent, he should avoid vigorous sports and any physical exercise which fatigues the head, because strength calls for the excessive [taking of] food and much nourishment does not dissipate from the body, and it is likely to produce moisture which moves up to the head". ١٤

"Taking a walk is good for him, so is moving the hands and similar [light exercises]". ١٦

1- Text: ثبابت , possibly a corruption of بثابت

ص ٩٤

"Abundant bathing with hot or cold water is ١٦
unsuitable, because cold water makes the body become
benumbed and harms the sense, while hot water makes the
nerves relaxed and the memory weak".

"In sum, the suitable [treatment] for him is a ١٩
light regimen. If the stomach is full, let him vomit. ص ٩٥
Afterwards, nourishment is reduced for 2 days. He
should leave soporific foodstuffs such as *garden lettuce* and *poppy*, and the ones from which vapours
arise such as *garlic, onion* and *cabbage*. However,
these [latter] may be taken in a little amount".

"Moderate drinking wine is better than drinking ٣
water. Because wine, drunk moderately, renders the
soul good and brings movement to it, makes its
movement and memory good, and, makes its owner quick
to understand something and to recall after
forgetting. Whereas, drinking water is bad, because it
causes cold and moistens, and that is one of the
things which is a great producer of forgetfulness".

"Sleep during the day should not be excessive, ٦
especially when the stomach is full. Generally, sleep
is bad in this [situation], for it causes heaviness
and laziness".

"Excessive wakefulness and intercourse cause forgetfulness and loosen firm thought". ٨

"Habituation to studying is the best help against that. It makes the soul used to remembering". ٩

"The sawdust (or powder) of ivory, if it is drunk, is helpful for the memory and relaxation of the bowels. *Squirting cucumber*, a gargle and sternutatory, are affective for phlegm". ١٠

The Fifth Chapter: **ON THE THING WHICH CLEANSES THE HEAD - [THAT IS APPLIED] AS A STERNUTATORY, SNUFF AND SMELLING MEDICINES - AND REMOVES THE OBSTRUCTIONS IN THE BRAIN. THE BENEFITS OF SNEEZING. THE DECOCTIONS WHICH [ARE TAKEN BY] 'BENDING DOWN TOWARDS THEM'[1], AND SUCH OF THEM AS CAUSE THICK[2] HUMOURS TO BE DISCHARGED AND CLEANSE IT [i.e. THE HEAD] THROUGH THE NOSTRILS. THAT WHICH STOPS THE EXCESS OF SNEEZING. THAT WHICH CLEANSES THE HEAD - [THAT IS TAKEN] AS A GARGLE AND A MASTICATORY - AND BRINGS TEARS AND CLEANSES THE BODY. GARGLES, MASTICATORIES AND THE LIKE WHICH DRY UP THE TONGUE, AND THEIR BENEFITS. A SUMMARY OF DISEASES WHICH HAPPEN IN THE BRAIN.** ٩٥

Pimpernel, if its juice is introduced [into the nose], as has been stated, cleanses the head. Of phlegm, the juice of *pimpernel* cleanses the brain through the nostrils. ٢٥

1- This is probabbly a treatment by the 'vapour bath', in which the patient uses a blanket to 'enclose' him and a steaming infusion or decoction in a pot, and 'he holds his head over the pot to inhale the vapour' (Lust, 1986; 44).

2- The text has الغيظة , a corruption of الغليظة

Pythagoras[1] said, "*Balsam* seed cleanses the head. *Onion* water, if is introduced [into the nose], cleanses the head. *Castoreum, hellebore* and the root of *wild celery*, if they are pounded after they are dried up, and the smell of *cabbage* juice, if it is snuffed up, cleanse the head. The substance of the root of *crowfoot*, if it is dried and ground and smelt, causes sneezing, as all very strong and hot drugs do". ٢

"Together with *bindweed* (or *ivy*), if it is introduced [into the nose], it cleanses the head".

Galen: "*Celandine*, if its juice is snuffed up, shakes the superfluity out of the brain through the nostrils, because it is very hot". ٧

Galen: "*Blue iris* cleanses the head by sneezing, if it is smelt and finely pounded. *Beet* juice cleanses the head, if it is introduced [into the nose] together with honey". ٨

1- Pythagoras: MS A reads "Galen".

Badīghūras is probably Pythagoras of Samos (532-497/6 BC), an mathematician and philosopher who lived from 532 to 497 BC (Sarton, vol.I, 1927; 73).

Ḥunain[1] said, "*Beet* water, if it is snuffed up, shakes the superfluity out of the brain through the nostrils". ١١

Ibn Māsawaih said, "If it is introduced [into the nose], it cleanses the head of thick moisture. *Sweet basil* removes obstructions appearing in the brain". ١٣

Ibn Māsawaih: "*Cyclamen* should be mixed with honey and introduced [into the nose] for cleansing the head". ١٥

Galen said, "*Cyclamen* juice cleanses the brain. If *copperas*, which has been diluted with water, is introduced [into the nose] and dripped into[2] the nose, it cleanses the head through the nostrils". ١٦

"*Squirting cucumber* juice, if it is smeared into the nostrils together with milk, causes the discharge of many superfluities". ١٨

1- Ḥunain: MS A reads "Galen".

2- Text: من perhaps for في .

ص ٩٦

Paulus: "The juice of wild and cultivated *sumac* ٢٠
cleanses the head, if it is introduced [into the
nose]". He said, "Its juice cleanses the brain because ص ٩٧
it (sumac) is an attractive".

"*Mustard*, if it is pounded and smelt, causes ٢
sneezing and cleanses the head[1]. *Gilly flower* juice
benefits the head, if it is introduced [into the
nose]".

Ibn Māsawaih said, "*Gilly flower* juice removes the ٣
obstructions appearing in the head and cleanses the
head, if it is introduced [into the nose]. *White
hellebore* excites sneezing".

Ibn Māsawaih said, "*Hellebore*, if it is smelt and ٥
inhaled, cleanses the brain. So do *pepper*, *long
pepper*, *mustard* and *aloe*: if they are ground and
smelt, they do that. *Colocynth* fat does the same.

1- Cf. Paulus says, "Mustard in warm honied water also answers the purpose (i.e. to purge the head) very well" (Adams, I; 183-4).

Beet water, if it is introduced [into the nose] after ٧
it is squeezed, *onion* water, if a little is smelt or dripped in the nose, decoction of *cumin* and *cumin* itself, if they are smelt and inhaled, *mountain mint* water, if it is snuffed, *squirting cucumber* water and *laurel* oil, if they are inhaled, and *lily* oil, bitter *almond* oil, *borax, cress, nettle* oil, *black hellebore, lily, euphorbium, fluvial mint* water, *mint* water and *castoreum*, if they are smelt or introduced [into the nose], cleanse the brain and cause the discharge of the thick and viscous humours from it".

My comment: "An errhine which is beneficial ١٤
against the congestion of the head and vertigo, and dries the brain and shakes out the vapours, [is made of] 2 drachms of [*hieral picra*, ½ [drachm] of *hellebore*, 1 *mithqāl* of *colocynth* fat, 1 *mithqāl* of *nigella* (or sesame, coriander, pepper[1]), 1 *dāniq* of crane's gallbladder, 1 *dāniq* of *musk* and *camphor*, and 1 drachm of dried *sweet marjoram*. [The vapour] from it is breathed into the nose. Among medicines which are snuffed up, are *celandine*, *lentil*, myrrh, gallbladders, gums, grains, hot or cold oils, [which are taken] according to need, and *fleabane elecampane* water. Among those which cleanse the brain are

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1- See شونيز on p. 85.

gum resin of latex plants, *beet* water, *hellebore* and *caper-bush*. Among snuff-medicines are *opium*, *euphorbium*, *asafoetida*, *castoreum*, *myrrh*, *milk*, *sweet marjoram*, *lycium juice*, *saffron*, *opopanax* and *liquid storax*".

"A sternutatory is useful against facial hemiatrophy, hemiplegia, apoplexy and epiplepsy, and cleanses the brain".

From the *Reminder* of ᶜ**Abdūs**[1]: "*Hellebore*, *pepper*, *castoreum*, *wild rue*, *harmel*, *aloe* and *nigella* should be sifted, and [the vapour] from it is breathed into the nose".

1- He is ᶜAbdūs b. Zaid (892-902 AD), the physician of the caliph al-Muᶜtaḍid (Ibn Abī Uṣaibīᶜah, 1965; 312-3; al-Ziriklī, IV, 1954-1959; 329). His book *al-Tadhkirah fi al-Ṭibb*, which is mentioned by Ibn Abī Uṣaibīᶜah, obviously survived only in fragments quoted in *al-Ḥāwī* and al-Birūnī's *al-Ṣaidanah* (Sezgin, III, 1970; 264-5).

"Another useful [sternutatory] against the heaviness of the phlegmatic head and wind [is made of] *colocynth* fat, *pepper, hellebore, lavender stoeches* and *castoreum*. It is also vigorous in the treatment of facial hemiatrophy, lassitude, the wind and the heaviness of the head [to apply a sternutatory which consists of] *pepper, long pepper, hellebore, ginger, the leaves of rue, feverfew, stavesacre, aloe, castoreum* and *Persian thyme*. It is breathed into the nose".

The *Perfection and Completion*[1]: "A useful inhalant medicine which is very wonderful and effective for facial hemiatrophy, hemiplegia, apoplexy, insomnia and epilepsy is prepared from *pepper, castoreum, dried rue, aloe, mustard, nigella* (etc.[2])- in equal parts - and *hellebore*, in similar quantity . . [This compound] is ground well. A little of it is breathed into the nose. It is effective and wonderful".

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1. This is probably *the Perfection and Completion* of Ibn Māsawaih (Ibn al-Nadīm, 1929: 411), which survived only in quotations of *al-Ḥāwī* (Sezgin, III, 1970: 235).

1. See p.130 n.1..

٩٨ص

The *Causes and Symptoms*: "Sneezing cleanses the chest, brain and nostrils. Natural sneezing evacuates vapours from the brain, and superfluities". ١٥

"A useful pill for facial hemiatrophy, hemiplegia, epilepsy, all cold diseases, vertigo and wind in the head, of which is inserted [into the nose] the quantity of a pepper-corn together with *sweet marjoram* water and a little *violet oil*, [is made of] 1 part each of *hellebore and 'black-seed'*, half a part each of *myrrh and aloe*, half a part each of the gum of *rue*, crane's gallbladder, *opopanax and castoreum*, and ¼ parts of *euphorbium*. [The concoction] is mixed with the water of *sweet marjoram* or *'mouse ears'* and made into pills and inserted [into the nose] at one time". ٧١ ٩٩ص

From the *Instrument of Smell*[1], Galen said, "Sneezing relieves the heaviness of the head affected by thick vapours". ٤

1- This is *De Instrumentum Odoratus* of Galen (Ibn Abī Uṣaibiʿah, 1965: 140; and see also Steinschneider, 1891: 455).

He said, "Many of the diseases of the head such as insomnia and faintness are cured mostly by sneezing and sternutatories".

Al-Yahūdī: "When the head is afflicted by heat from snuffing-medicine, insert *violet* oil and milk into his (the patient's) nose, and put on his head wine vinegar, the white of egg and *marsh-mallow*".

"Hot *Kabūb*(?)[1], *sweet marjoram, serpolet (or wild-thyme, laurel* leaves, *citron* leaves, *Armenian wormwoods* and *galingale* should be cooked and [applied] by 'bending down towards it' (i.e. the decoction)".

From the book of *Bodily Humours* of Jūrjis[2]: He said, "The humours may be evacuated from the head by combing, bandaging and anointing the head with hot drugs".

1- *Kabūb* cannot be identified.

2- He is Jūrjis, or Jūrjius, b Bakhtīshūʿ (d.769 AD), a physician from Jundīshāpūr, who was invited by the caliph al-Manṣūr to Baghdad in 765 and appointed as the head of the caliph's physicians (Ibn Abi Uṣaibīʿah, 1965: 183). His work *Kitāb al-Akhlāṭ* survived only in fragments in *al-Ḥāwī* (see Sezgin, III, 1970: 209).

He said, "Sneezing subsides when it is possible ١٢
[for] a man to avert it, and he does not sneeze [because of] his effort".

Bakhtīshūᶜ[1]: "The leaf of *large basil*, if it is ١٤
put into the nose or its juice is dropped and inserted [into the nose], stops excessive sneezing. If it is rubbed on the neck and [used to] block the nostrils, sneezing will cease".

"*Myrrh*, if 1 dāniq of it is inserted [into the ١٧
nose], clears the brain and expels thick vapours from it".

"An errhine from the *Choice*[2] of **Ḥunain** is made of ١٨
hellebore, false sweet flag and *rose seed in equal parts*. He applies this".

1- Bakhtīshūᶜ is either Bakhtīshūᶜ b. Jūrjis (766-809 AD), a physician of al-Mahdī, al-Hādī and al-Rashīd, or his grandson, Bakhtīshūᶜ b. Jibrā'īl (d.869 AD), also a physician of the ᶜAbbāsid caliphs. They were from a Syriac-speaking family (see Ibn Abī Uṣaibīᶜah, 1965; 183-214).

2- This is *Ikhtiyār al-Adwiyah* of Ḥunain b. Isḥāq (Ibn al-Nadīm, 1929; 409-10), which has been lost, exists only in fragments preserved in *al-Ḥāwī* (see Sezgin, III, 1970; 255).

"A sternutatory, which is very good when [an affliction] is acute and hot, [is composed of] 1 part of *hellebore* and 2 parts of *rose seed*. Or, take *rose seed* and false sweet flag". ١

"A snuff-medicine which cleanses the head very well, [a pandect is the authority for my emendation of *colocynth fat*], is *lavender stoeches*, *hellebore* and *dodder*, which are mingled together. A little of it is inserted [into the nose]". ٣

Ibn Māsawaih said, "If *large basil* is inserted [into the nose], it stops the excess of sneezing". ٥

He said, "The *pimpernel* gum, if it is gargled with its water which is expressed from it, cleanses the head of phlegm. *Cabbage* juice breaks down plegm, if it is gargled with its water together with *oxymel*". ٦

Ibn Māsawaih: "The bark of the root of *caper-bush*, if it is masticated, effectively brings phlegm out from the mouth; so does its fruit". ٨

Galen said, "The bark of the root of *caper-bush* brings out phlegm, [if it is] masticated, or used as a gargle after being cooked. *Hellebore*, if it is ٩

masticated, causes much [phlegm] to be discharged. The root of *blue lily* brings tears".

"*Feverfew* brings out phlegm, if it is masticated. ١٢
Pepper, if it is masticated together with *raisin*, extracts phlegm".

"*Wild sumac*, if it is masticated, brings phlegm ١٤
out".

Galen said, "It does that because it is hot, moist ١٤
and drawing. *Mustard* extracts phlegm, if is masticated, and, if it is gargled with *oxymel*, it brings out much phlegm".

Ibn Māsawaih said, "The root of *schoenus*, *mastic*, ١٦
staphisagria **- it is seed of** ***elecampane***[1] ***and it is 'raisin of the mountain'*** *- black and white peppers, nettle seed, mustard, Armenian borax, colocynth* fat

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1- Text: حب الراسن [seed of elecampane]. According to other authorities, ميويزج [Staphisagria] is حب الرأس [seed of the head]. See ميويزج on p. 94, and راسن p. 82.

and *feverfew*, all of these, if they are gargled with *honeyed-oxymel*, benefit the uvula and discharge viscous moisture from the mouth. So do *mint* water, if it is used as a mouthwash with *absinth* water together with *honeyed-oxymel, and the root of licorice*, if it is chewed together with mastic, staphisagria and the 'gum-resin of Nabataeans'. So do *hyssop, large and small cardamoms, rock-salt, sal ammoniac, opopanax, balm seed* and *asafoetida*. All of these, if they are masticated or the palate is smeared with them, extract such viscous moisture as is in it".

Majhūl[1]: "A gargle [which causes] phlegm to flow down [is composed of] *hiera picra, feverfew, mustard, staphisagria, pepper, long pepper, ginger, white hellebore* and the like. The gargle is good for causing moisture to descend, and it shakes out what is in the brain. It dries the tongue, sight and hearing,

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1- ***Majhūl*** (*lit.* 'not known') is perhaps used by al-Rāzī to state an opinion whose author has been forgotten by al-Rāzī. In *al-Ḥāwī*, it frequently appears likewise,

"..... مجهول، قال" ؛ "مجهول من كتاب مجهول" , etc.

(see *al-Ḥāwī*, vol.I: 145; vol. II: 26; and *passim*).

it has its strongest effect in a warm bath or just afterwards - because the passages[1] at that time are large - and, it is beneficial with regard to the diseases of the brain, palate, mouth and throat".

"For the diseases of the brain, such as hemiplegia, facial hemiatrophy, epilepsy, and the like, there are several categories [of gargles]. The first of them is cold water. It contracts the throat and palate and strengthens it, and prevents hot inflammation. The second is hot water which breaks down the phlegm from the windpipe, removes hoarseness and brings out much phlegm; also *oxymel* which stops and lightens phlegm, and causes it to descend; also, vinegar which is more efficacious; so does a good *garum* which discharges much phlegm and does not excessively heat. After it, hot sweet water is several times gargled to remove its roughness. Vinegar is diluted with oil to take away its [effect] of 'setting teeth on edge' and its acridity".

1- This is the passages, or blood-vessels, in general, or the passages of the spirit, or *pneuma*, in particular

(see below p.143 n.2.)

ص١٠١

From the *Reminder* of ᶜ**Abdūs**: "A gargle which is salutary against hemiplegia and facial hemiatrophy [is with] *mustard, thyme, ginger, pepper, long pepper, feverfew, Armenian borax, black-vine (etc.*[1]*), blue iris, staphisagria* and *dried sweet marjoram*. They are gargled together with *oxymel*". ١٩ ص١٠٢

The *Bodily Humours*[2]: He said, "If you want to evacuate [phlegm] moderately from the palate, give the patient to chew *mastic* kneaded with *pepper*. If we want much [evacuation], we prescribe him *feverfew* and *staphisagria* and gargling with honey, *mustard, concentrated must* and the like"[3]. ٢

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1. See فاشرسين dn p. 86.

2. This is either the work of Jūrjis (see p. 134 n. 2 above), or Hippocrates. Hippocrates' *Bodily Humours* came down to the Arabs together with Galen's commentary and was translated by ᶜĪsā b Yaḥyā for Aḥmad b Mūsā. See p.31.

3. This statement cannot be traced precisely in Hippocrates' Περὶ χυμῶν (see Jones, IV, 1931: 63-95) or *Kitāb Buqrāt fī al-Akhlāṭ* (see Mattock, 1971).

From the *Compendium of the Small Pulse*[1]: "The diseases appearing in the brain either happen in its substance itself, or in the veins which are in it, or in its ventricles, or in the passages of the *pneuma* [which run] from it to the nerves". ٥

He said, "Among the diseases of it (the brain), which happen in its substance itself, are such as inflammation. This inflammation, if it is due to a sharp(?)[2] humour, it is called hot meningitis; if it is due to a cold humour, it is called cold meningitis; and, if it is due to both these elements mixing together, it is called superior(?)[3] meningitis". ٨

1- This is probably *the Book of the Small Pulse* of Galen. See p. 36, no. 17.

2-'Sharp': text حادة , but possibly حارة [hot] as opposed to باردة [cold] later in the same sentence.

3- Text: سرساما ارقيا (a superior, or higher, (?) meningitis).

"Acute diseases in the veins of the brain are such ١٠
as melancholia, vertigo and giddiness; while in its ventricles are such as the obstructions. This may prevent anything from passing through it (i.e. obstruction) at all. The disease which arises from it is apoplexy; whereas, if what can pass through it is little, epilepsy arises[1]. If the plugging happens in the two anterior ventricles[2] [and it] is due to the phlegmatic humour, [a disease] such as phlegmatic lethargy arises;

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1. صرع [epilepsy]. Cf. Lane: a certain disease, resembling madness, or diabolical possession, (accord. to Avicenna), preventing, but not completely, the vital organs from performing their actions [or functions]; the cause of which is an obstruction that occurs in one or more of the venters of the brain and in the ducts of the nerves by which the members are moved, [arising] from an abundant thick or viscous humour, whereby the vital spirit, or nervous fluid, is prevented from pervading them in the natural manner, and consequently the members become [spasmodically] contracted.

2. See p. 115 n. 1 above.

or, [if the plugging happens] in the posterior ١٤
ventricle [and it] is due to a cold and dry humour, or cold and dry bad temperament without humour, [a disease] such as coagulation[1] [arises]".

"The diseases happening in its passages, through ١٦
which *psychic pneuma*[2] passes to the nerves, are the obstructions. If they are obstructed so that nothing could be transmitted through the passages to the nerves at all, complete paralysis happens".

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1. جمود means 'coagulation', 'hardness', or 'tearless' (Hava), or 'dullness' (Lane). 'Tearless' is Adacrya, the absence of tears (Barton & Wells).

2. *Pneuma* [روح], which is frequently dealt with by Galen in his works, is used in two senses: (1) the inspired air, and (2) the **vital principal**, which becomes resolved into three kinds as follows:

[i] πνεῦμα φυσικόν (natural or *physical pneuma*) which is arabised as روح طبيعى ; [ii] πνεῦμα ζωτικόν (animal or *vital pnuema*), arabised as روح حيوانى

and [iii] πνεῦμα ψυχικόν (*psychic pneuma*), arabised as

روح نفسانى ; which is carried by *longitudinal canals* in the nerves; this corresponds to the ψυχή (Brock, 1928; in introduction, xxxiv-xxxv; Dols, 1984; 20-1; See also Mattock, 1966; 5-6 [for روح حيوانى]; Lane, under [for روح حيوانى and روح انسانى.)

ص١٠٢

My comment: "Complete paralysis is, to me, apoplexy". ١٨

"If some of the obstructions cause a blockage, it causes convulsion. The *psychic pneuma* in this affliction passes to the nerves, but it is partly hindered". ١٨

In the book of *Milk*[1], **Rufus** said, "The repletion of the stomach is very harmful for the head. This is known from [the fact that] vomit, sleep and digestion, ease drunkenness and it is relieved from it (i.e. the head)". ٢٠ ص١٠٣

1- This work is lost, or survived in fragments (Daremberg, 1879; preface xxxiii).

CONCLUSION

The art of medicine has been practised since ancient times. The Mesopotamians, Egyptians, Indians, Persians and Greeks were among the early nations who carried out investigations into this field of knowledge. They knew many of our modes of administration of drugs, which were drawn from plants, animals and minerals.

Their ideas were later inherited by the Arabs. Through such avenues as the conquests of centres of learning, and trade contact, the ancient medical knowledge passed down to the Arabs by oral transmission. The more significant route, however, was by translation efforts, which passed through two stages: the period before and during the ʿAbbāsid era.

Before the ʿAbbāsid period, cities such as Alexandria and Jundīshāpūr became important centres of translation. During this time Greek and Indian works were translated into the Syriac and Persian languages.

The translation movement culminated during the first century of the ʿAbbāsid caliphate, the period of the so-called 'the Golden Age' of Arabic learning,

when Baghdad, where Bait al-Ḥikmah was instituted, became the main centre of translation. It was during this period that the most competent translators, such as Ḥunain b. Isḥāq, Ḥubaish b. al-Ḥasan and others, flourished and translated many valuable ancient medical works into Syriac and Arabic.

It is clear that the Greek world was the chief supplier of medical sources. These reached the Arabs through direct translation of original works and through such intermediaries as Syriac and Persian. Broadly speaking, these two latter acted mainly as preservers of medical sciences rather than as original suppliers of such sciences. Persian in particular served as a channel for both Greek and Indian works.

Those translated works, then, became sources and references for compilation and composition by Muslim physicians. One of the works which were compiled and based on the translated works is al-Rāzī's collection of notes presented in *al-Ḥāwī*. This 'medical collection' is dominated by the views of Greek physicians, mainly those of Galen, interspersed with of Indians, Syrians and Persians.

Thus, the influence of foreign medicine upon Islamic medicine can be clearly seen in *al-Ḥāwī*. The

theory of humours and the theory of purification, for instance, are among the doctrines which were in high esteem. Many new drugs, such as *hiera picra* and oxymel, which were used extensively, were introduced.

The enquiry of the names of drugs shows that most of the names came originally from ancient Mesopotamia, usually through such intermediaries as Aramaic, Hebrew and Persian. Some of them were originally Greek, Persian and Indian, and a very few Egyptian. Several names can be seen as having an Arabic origin.

The names originally from Greek usually end with ا . Among them are انقرديا (cashew nut), ايرسا (blue iris), باقلا (beans), etc. This is a consequence of the fact that Greek works mostly came down to the Arabs through Syriac, as we have said. While, Indian names such as بلادر (cashew nut), etc. are usually mixed with Persian elements, as a result of the close relation between ancient India and Persia, and the role of Pahlavi as the intermediary between Indian and Arabic.

Another fruit of the transmission process is the variety of the forms of the names of drugs. This is due in part to the various transliteration systems used by translators. The difference between ميبختج (concentrated must) and ميفختج - which are derived from مى پخته - is due to the different transliteration of the Persian پ , which is rendered into ب by some translators, but into ف by others. The Greek θαγία

(thapsia) become تافسيا and ثافسيا , because θ is transliterated into ت by some translators, but into ث by the others.

Another factor of the variety may be due to corruption in speaking, or dialect. For example, some people say مرزنجوش (sweet marjoram), but others say مرد قوش and مرد د وش .

However, confusions also happen in writing. It is often the case that words such as باد روج (large basil) change to باذ روج , and انقرديا (cashew nut) to انقرويا ء انقرذيا and انفرديا .

The variety of the sources of transmission can result in the same plant's being frequently called by different names in Arabic. For illustration, *cashew nut* is called انقرديا , which derives from Greek, and it is also called بلادر which derives from Persian-Indian. By such a way, the Arabic vocabulary of drugs was enriched.

We have also seen that the meanings of the names of some foreign drugs correspond exactly to those of the Arabic ones. For example, Dioscorides' κάλαμος ἀρωματικός ('perfumed reed' i.e. *false sweet flag*) exactly corresponds to قصب الذريرة . This is probably

because foreign drug names were literally translated into Arabic words. Frequently, the choice of Arabic names for the foreign ones was done with fair success, not to mention the successes in paraphrasing and arabizing foreign technical terms. These were undoubtedly done by such competent translators as Ḥunain b. Isḥāq and Ḥubaish b. al-Ḥasan. In short, the effect of the translation movement went beyond medicine proper. Arabic scientific terminology was enriched with new word forms (neologisms) or with arabised foreign words. The net result of this process in the medical and other fields was the emergence of Arabic as a language of science.

A picture then emerges of an ʿAbbāsid Baghdad in which scholars under the tutelage of the ʿAbbāsid Caliphate, using Arabic as their language of scholarship, collected, translated and synthesised the scholarly efforts of their predecessors in the Near and Middle East, and subsequently developed them.

The *Liber Continens* of Rhazes is particulary valuable as presenting evidence which enables details of this picture to be seen more clearly, in that Rhazes, as we have seen from the selected text presented above, epitomises the method of Arabian scientific enquiry.

APPENDIX

كتاب الحاوى الكبير لمحمد زكريا الرازى : الجزء الاول *1

الباب الرابع فى قوى الدماغ و فى ضرر القوى الثلاث (صفحة ٨٦)
من قوى النفس التخيل والفكر و الذكر والمقوية لها
و الضارة بها و بالدماغ و بالذهن و فى سوء مزاج الدماغ
و جمل من امره و نقصانه و زيادته و ما ينفع الذهن
والعقل و ما يضربهما و ما يفسد الرؤيا و يعين على صحتها ·

الثالثة من الاعضاء الآلمة قال كان ارجيجانس يداوى ذهاب الذكر
بغاية التسخين حتى بالمحاجم و دواء الخردل قال اذا تعطل الذكر
او ضعف ففى الدماغ سوء المزاج بارد و يجب ان يسخنه الا انه لا يجب
ضرورة ان يجفف او يرطب لكن ينظر الى ما تقدم من التدبير و الى
ما يسيل من الانف و الى النوم فان كانت زايدة يبست مع ذلك و ان
كانت ناقصة رطبت وان كانت معتدلة سخنت و لم تجفف و لم ترطب
(الف ٢٩) فانى اعرف رجلا من الفلاحين و رجلا من الفلاسفة
عرض لهما نقصان الذكر و كان تدبير كل واحد منهما لطيفا فيما مضى
وكانوا يتأذون بالاشياء التى تجفف و تنفعهم الاشياء التى تسخن و ترطب·

الرابعة قال جميع انواع اختلاط العقل ثلاثة اما ان يكون الحس

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1. The text of the passage translated in pp.97 -144, taken from volume I of al-Hawi, the Hyderabad edition, 1955-70.

فاسدا و الفهم صحيحا مثل من يرى على ثيابه تنينا يحتاج ان له اشياء امثل
هذا النحو لاحقيقة لها و معرفته بها صحيحة ، و مثل الرجل الذى كان يسمع
فى ناحية بيته زمارين لا ينظرون ليلا و نهارا و اما ان يكون الحس صحيحا
فيخيل الاشياء على ما هى عليه و الفكر فاسدا مثل الرجل الذى رمى
للبساط الصوف من السطح و بجميع الاوانى الى ما كانت هناك فان هذا ٥
كان تخيله صحيحا و ذاك انه كان يسمى كل واحد منهما باسمه ثم يقصد
اليه الا انه كان لم ينظر انه يفهم انه لا ينبغى ان يرمى بها الى اسفل
٠لى : وجميع من يخلط انما يخلط فى تخليط الكلام لا فى الاسماء المفردة
واما ان يجتمعا ٠لى : هذا صعب يستعان بالثالثة و جوامعها من
الاعضاء الآلمة ٠ ١٠

جوامع الثالثة من الأعضاء الآلمة ، قال استدل على سوء المزاج
الحار فى الدماغ باختلاط الذهن ،و على سوء المزاج البارد بتعطل الافعال
النفسية و ذهاب الحس و الحركة ،و ينبغى ان يكون بذهاب الحس و الحركة
و على يبوسته بالارق ،و على رطوبته بالسبات ،و على حره و يبسه باختلاط
العقل مع الارق ،و على برودته و رطوبته بتعطل الحركات مع السبات ، ١٥
و على حره و رطوبته باختلاط العقل مع نوم ،و على برده و يبسه بتعطل
الحركة و السهر،واذا كانت هذه الاصناف بلا مادة لم يجر حينئذ من
الانف و الحنك و الاذن شىء ،و اذا كانت مع مادة جرى منها حينئذ
اخلاط مرارية و اما بلغمية ٠

قال و تعطل الذكر و نقصانه يكون دائما من البرد الا انه ان كان ٢٠

(ص٨٨)

مع سبات فمعه رطوبة و ان كان مع ارق فمعه يبس.

المقالة الاولى من الامراض الحادة ،قال الخمر ردىء للذهن.
من كناش بولس،قال الذهن انما يشحذه و يقويه اليقظة و تلطيف
التدبير لا النوم و ملأ البطن.

قال وقد اجمع الناس على انه لا يتولد عن البدن الغليظ ذهن لطيف. ٥
العادات، قال من اعتاد ان يتحفظ قدر عليه اكثر لان ذلك
(الف ٣٠) للذهن بمنزلة الرياضة فكما ان من اعتاد ان يروض بدنه
هو اقوى على الرياضة كذلك من راض بعض قوى نفسه اى قوة
كانت على فعلها صارت افضل فى ذلك الفعل.

من قوى النفس، قال الرطوبة تبلد النفس، و اليبس يشحذها وجدت ١٠
انه ليس بخلط[1] الانسان عن رتبة الملائكة فى الفهم الا الرطوبة لان
النفس ارتبطت بجوهر رطب، قال و الدم الكثير الغليظ الكثير الحرارة
يفعل القوة و الجلد اكثر و الدم الاكثر لطافة الاكثر برودة يفعل الحس و الفهم
و الفهم اكثر . لى : ينظر فيه قال و قلة الدم اعون على الفهم و لذلك
صارت الحيوان التى لا دماء لها افهم[2] من ذوات الدم ايضا ما كان ١٥
منها ذو دم بارد لطيف فهو افهم مما هو على خلاف ذاك و افضلها
كلها ما كان حار الدم لطيفه صافيه فان هذا افضل فى الفهم . لى :
كان ها هنا مناقضة فانظر قال و الحيوان الذى دمه ارق و الطف اسرع حسا.

طيماوس المقالة الاولى ، قال انما امرت الاطباء بتقدير الغذاء

* (١) كذا و لعله يحط (٢) فى ا ــ اقوم.

* Apparatus of the editor of the Hyderabad edition.

لئلا يكثر الدم فى البدن لان كثرة الرطوبات فى البدن تذهب الفهم ، و يستدل على ذلك مرارا كثيرة ان من كثرت رطوبته كسل و بلد و يكثر نومه و هاجت به الامراض الى ان يفقد معها حس الذهن، واذا رطب الدماغ ذهب الذهن كالحال عند السكر ٠لى : اليبس ابدا يجعل النفس اشد حركات و اسرع و ما يجده فيمن يغلب عليه اليبس انما هى حركات قد جاوزت مقدار سرعتها الحال الطبيعية للناس فاما ان يكون اليبس مضرا بالذهن نفسه فلا بل هو زايد فيه ابدا لكن افعال النفس عندنا بحد لا يزيد يجاوزه اليبس الغالب يجوز بها ذلك الحد ضربا يحتاج الى ان يعالج منه اذا افرط٠

السادس عشر من العلل و الاعراض ، قال سوء المزاج الحار المفرد فى الدماغ يحدث وسواسا فان كان مع يبس حدث مع ذلك سهر فان السهر خاص باليبس و النوم بالرطوبة ، واما برودة الدماغ مفردة فانه يحدث البلادة فان كان مع رطوبة احدث سباتا ثقيلا، و المزاج الحار الرطب يحدث سهرا مختلفا بالوسواس والسبات، و اما سوء المزاج البارد اليابس فانه يحدث عنه عدم البدن للحركة و ان يبقى شاخصا وهو قاطوخس٠

الخامسة من السادسة من ابيذيميا (الف ٣٠) قال العلل التى تضعف فيها الفكر و الذكر ينفع منها ان يبصر العليل و ان يسمع ما يغمه شديدا او يلجأ الى الفكر فيه و يصير ذلك سببا لمراجعة الفكر٠

الخامسة من الادوية المفردة ، قال الافتيمون و المر والميعة السائلة

و الزعفران ضارة للدماغ يحدث فى الرأس ثقلا و حالة شبيهة بالسكر
و كذلك كلما اورث بعقب اكله من الاغذية سدرا وثقلا فى الرأس
فانه ردى للدماغ، والاشياء الضارة لفم المعدة تضر الدماغ بالمشاركة.

اليهودي ، قال مما جربت انه ليس شيء خير لاختلاط العقل و الامراض
الباردة فى الدماغ جملة من ان يعطى العليل كل يوم دانقا من الشبادريطوس ٥
غدوة و مثله عشية ثلاثون يوما فانه يبرؤه البتة و نفعه من الفالج
ايضا اى نفع.

الطبرى ، قال قد يكون ضروب من ذهاب الحفظ عن اليبوسة
الا ان اكثره يكون عن الرطوبة و ينفع للحفظ ان يؤخذ ثلاثين كندر
و عشرة دراهم فلفل فيدقان و يشرب منه على الريق كل يوم مثقالا الى
مثقالين اربعين[1] يوما ثم يؤخذ وج فيغمر بسمن البقر و يدفن فى الشعير
اربعون يوما يصب عليه غمرة عسل يدفن ايضا فى الشعير عشرين يوما
ثم يوكل منه كل يوم قطعة فانه عجيب لذهاب الحفظ .لى : ينبغى ان
يوكل وج مربى بالعسل بلا سمن و ينفع للحفظ غاية النفع هذا
المعجون .لى : يؤخذ كندر وزن خمسين درهما ، فلفل عشرة دراهم ، وج ١٥
عشرة دراهم ،سعد عشرون درهما ، اهليلج اسود زنجبيل عشرون عشرون
درهما ، عسل البلادر عشرة دراهم ، عسل مثل الجميع.

شرك ، البرد[2] يصحح الذهن و يطيب النفس. اهرن ، عالج من ذهاب
الذهن خاصة و السهر و النسيان بالبلادر خاصة و بالغراغر الجالية

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(١) زيد من ا ـ (٢) كذا.

للبلغم فان عتق هذا الداء اعنى ذهاب الذكر فاكوه فى الاخدعين و القفا ،
و ما كان من ضروب فساد الدماغ مع مادة فاستفرغ تلك المادة ،وما كان
بلا مادة فقابلها بالضد •لى : قد تحدث علل فى الدماغ من اجل نقصان
كميته و لذلك تنقص عقول الهرماء لان الدماغ و المخ ناقصين ، و اوفر
الادمغة الحيوان القريب الولادة• ٥

و علامة العلل الحادثة (الف ٣١) عن نقصان الدماغ ان يفقد معها
دلائل سوء المزاج و يكون العقل مسرورا [1] كالحال فى المشايخ الهرماء•

و مما يقلل الدماغ و مخ العظام التعب و التدبير الملطف فى الاغذية
الملطفة والباه و السهر و مما يزيد فيه اضداد هذه ، و الاستحمام و اكل
اللبوب بالسكر و الفالوذج و نحوه من الاغذية اللذيذة الكثيرة الغذاء ١٠
و البندق و اللوز خاصة اذا اكلا بالسكر•

ابن ماسويه فى كتابه الموسوم بالادوية المنقية ،قال ينفع من
النسيان اكل الخردل و طلاء مؤخر الرأس به مع الجندبيدستر ، قال
و اكل البصل اذا اكثر و ادمن يفسد العقل و يورث النسيان ، و قال
الزم لصاحب النسيان الانقرويا ياكل يوم درهما بماء حار على الريق ١٥
و اجعل غذاءه لحوم الطير اليابسة الخفيفة قليلة السمن كالعصافير و الشفانين
والقنابر و الطيهوج و شرابه ماء العسل•

ابن سرابيون ، قال اذا فسد مزاج البطن المؤخر من الدماغ فسد
الحفظ فان فسد من الرطوبة كان معه سبات و نوم كثير و سيلان من

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(١) كذا•

الانف و الفم و بالضد ،فان فسد من الرطوبة فعليك بالتدبير الملطف
و القعود فى موضع مضىء ليكثر التحلل ٠لى : ينبغى ان يكون موضعا
يابسا ، واسهلهم بايارج و الشحم مع جند باد ستر و اسطوخودوس و نحوها ،
ثم بعد الاكثار من الاستفراغ أعطهم الانقرويا ، وأدلك الرأس حتى يحمر
الوجه والثافسيا والجند باد ستر والافربيون ، و أدلكه بزيت عتيق و نطرون ٥
و استعمل الغرور فى الحلق و شمهم المسك و الجوزبوا و المرزنجوش،
و اذا كان فاسد الذكر من البرد و اليبس فادلك الرأس بدهن خيرى
و دهن سوسن،و اسقهم شرابا و ينطل و اجعل اغذيتهم مرطبة مع اسخان
و اسقهم الخمر و اكثر نطل الرأس بالمسخنات المرطبات٠

من المسائل الطبيعية لارسطاطاليس ، قال الانسان اكثر فهما من ١٠
الحيوان لان روحه الطف٠ ٠لى : يكون روحه الطف لان دمه الطف٠

المفردات ، المضرة بالذهن و النافعة له الكزبرة قال ان الاكثار منها *
يخلط الذهن فلذلك ينبغى ان تجتنب الاكثار و الادمان لها ، قال
الكندر اذا شرب خير للاصحاء و الباقلا يعرض لمن اكله احلام ردية ،
و كذلك من العدس و الكرنب و كذلك الكراث و اللوبيا و البصل من ١٥
اكثر منه القاه (الف ٣١) فى ليثرغس٠

غوبوس فى كتاب الفلاحة ، الباقلا يوهن الفكر و يمنع الرؤيا الصادقة
لانه يولد رياحا كثيرة٠

الخوز ،قالت الاكثار من البصل يفسد العقل٠

ابن ماسوية ، قال الزعفران ردى للذهن و الاكثار منه يحرق الدم ٢٠

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* It is probably a corruption of منها.

و الكندر يحرق الدم وهو جيد للحفظ ، و الفجل يلطف الحواس اذا أكل •

ماسرجويه ، ايور[1] دواء فارسى يذكى الذهن و العقل و يعرف بهذا الاسم ،اقدر و هو دواء كرمانى خاصيته تذكية الذهن •

الخوز و ابن ماسويه و ابو جريج و الفهلمان و ابن ماسه ،البلادر خاصيته اذهاب النسيان و يخاف على شاربه من الوسواس و ربما اورث البرص و الجذام ، و القدر منه نصف درهم •

الخوز ، قالت لحم الدجاج يزيد فى العقل •

شرك ، الهليج الاسود يزيد فى الذهن و الحفظ و يقوى الحواس و يذهب السهر و غروب الذهن •

ابن ماسويه ، الزنجبيل جيد للحفظ• ابو جريج ، قال ان القى كل يوم من الكندر مثقال فى الماء و شرب كل يوم زاد فى الحفظ و الذهن و اذهب بكثرة النسيان غير[2] انه يحرق و يحدث صداعا و يحرق الدم[2] •

ماسويه ،الكندر يزيد فى الذهن و يذكيه•

سدهسار ، قال الزنجبيل يشحذ الذهن•

ابن ماسويه ، قال السعد يزيد فى العقل•

ماسرجويه ، المسك يقوى الدماغ و يحفظه[3] •

روفس نشارة العاج يزيد فى حفظ الصحة•

جالينوس ، قال الشراب اذا اكثر منه افسد الفكر و جعله بليدا قليلا كدرا •

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(١) كذا (٢ــ ٢) ليس فى ا (٣) فى ا "يجففه"

ابن البطريق ، فى كتابه فى السموم ، ان شرب من عسل البلادر نصف درهم اصلح الحفظ و ان اخذ منه مثقالان قتل ٠

من قول روفس فى حفظ النسيان الكائن فى صحة البدن يدل على الصرع و السكات فينبغى ان يسخنوا و يلطخوا الرأس و يسقوا امامه ماء العسل هو [1] يفيد [1] جودة الهضم ، والسكر والامتلاء و هبوب الريح الجنوبية كلما ازدادت ردى لذلك و المزاج اليابس واصلح فى الحفظ ، و ليس البارد بموافق فينبغى ان يمال مزاج تريد تذكيته الى الحر و اليبس على تدريج و لا تفرط فيمرضه و لا ينبغى ان يخاف على الرطوبة و لكن بقدر ما ينقص فضولها لان الرطوبة اذا خف غلبها

و قلت فى البدن تبع ذلك برد المزاج و هو غير موافق فى الذكر والصبيان و ان كان مزاجهم رطبا فيعينهم على جودة (الف ٣٢) الحفظ خلا الفكر من الانتقال و الامعان فى الرأس لان الامعان فى الدراسة يخفف رطوبتهم من امزجتهم على ان حفظهم ليس ثبابت* كحفظ الرجال ولا ينبغى ان يروض من تريد تذكيته رياضة قوية و لا رياضة بتعب الرأس لان القوة تدعو الى الاستكثار من الطعام و الغذاء الكثير ما يتحلل من البدن و الاخرى تحدث الرطوبات و تجرى الى الرأس و المشى صالح له و تحريك اليدين و نحوه و كثرة الاغتسال بالماء الحار كان او بالبارد غير موافق وذلك ان البارد يخدر البدن و يضر بالحواس و الحار يرخى العصب و يوهن الذكر و يوافقه فى الجملة التدبير الملطف

(١—١) زيد من ا٠

* It is probably a corruption for بثابت.

وان يكون اذا املأ تقيأه و خفف الغذاء بعده بيومين ويترك الاغذية
المنومة كالخس و الخشخاش و الذى يرتقى منها بخار كثير كالثوم و البصل
و الكرنب الا القليل من هذه و شرب الشراب باعتدال اصلح منه الماء
لان الشراب باعتدال يطيب النفس و يجلب اليها الحركة و يجعلها حسنة
الحركة و الذكر و يسرع صاحبه الى فهم الاشياء و التذكير بعد النسيان ٥
فاما شرب الماء فردى لانه يبرد و يرطب و ذلك مما يكثر النسيان
و لا يكثر نوم النهار خاصة مع تملى البطن ، و بالجملة كثرة النوم ردى فى
ذلك لانه يثقل و يكسل و الافراط فى السهر و الجماع ينسيان و يحللان
الفكر الثابت و اعتياد الدرس نعم العون على ذلك فانه يعود الى النفس
التذكر ، و نشارة العاج اذا شربت تعين على الحفظ والاسهال و قثاء الحمار ١٠
و الغرور و العطوس الحادة للبلغم.

الباب الخامس

فيما ينقى الرأس بالعطوس والسعوط والشموم
و يفتح سدد الدماغ و منافع العطاس و الطبيخات التى
يكب عليها و ما يخرج الاخلاط الغيظة* منها و تنقية ١٥
من مشاميه و ما يقطع كثرة العطاس و ما ينقى الرأس
بالغرور و المضوغ و جلب الدموع و ينقى الجسد و اللسان
يجففه الغراغر والمضوغات و نحوها و منافعها و جمل
العلل العارضة فى الدماغ.

ابو غالس، اذا اسعط بعصارته نقى الرأس فيما ذكر ومن البلغم ٢٠

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* It is probably corruption of - الغيظة .

عصارة ابى غالس ينقى الدماغ من المنخرين •

قال بديغورس[1] ، حب البلسان ينقى الرأس، ماء البصل اذا اسعط به ينقى الرأس، الجندبادستر ، الكندس، اصل الكرفس البرى ، اذا دق بعد يبسه و شم عصارة الكرنب ينقى الرأس ان استعط بها ، مادة اصل الكبيكج اذا جفف و سحق و شم عطس كما يفعل كل الادوية القوية (الف ٣٢) الاسخان •

مع[2] اللبلاب اذا اسعط ينقى الرأس • جالينوس، الاميران اذا استعط بعصارته نفض من المنخرين فضل الدماغ لانه حار جدا • جالينوس الايرسا ينقى الرأس بالعطاس اذا شم و انعم دقه ، عصارة السلق ينقى الرأس اذا اسعط بها مع العسل •

و قال حنين[3] ، ماء السلق ان استعط به نفض فضل الدماغ من المنخرين •

قال ابن ماسويه ، ان سعط به ينقى الرأس من الرطوبة الغليظة •

الفلنجمشك[4] ، يفتح السدد العارضة فى الدماغ•

ابن ماسويه ، بخور مريم يخلط بعسل و يسعط به لتنقية الرأس، وقال جالينوس، عصارة بخور مريم ينقى الدماغ، اذا سعط القلقند ان حل بالماء و قطر من الانف نقى الرأس من المنخرين •

عصارة قثاء الحمار ان لطخ به المناخر مع لبن افرغ فضولا كثيرة •

بولس[5] ، عصارة السماق البرى و البستانى ينقى الرأس اذا سعط به

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(١) فى ا ــ جالينوس (٢) كذا و لعله و مع (٣) فى ا ــ جالينوس (٤) فى ا ــ فلنجذ (٥) فى ا ــ جالينوس•

قال [1] عصارته تنقى الدماغ لانه جاذب.

الخردل ان دق و شم عطس و نقى الرأس، و عصارة الخيرى ينفع الرأس اذا سعط به ، قال ابن ماسويه ، عصارة الخيرى يفتح السدد العارضة فى الرأس و ينقى الرأس اذا سعط به ، الخريق الابيض يهيج العطاس.

قال ابن ماسويه الكندس اذا شم و استنشق نقى الدماغ و كذلك ٥
يفعل الفلفل و الدار فلفل والخردل و الصبر اذا سحق و شم فعل ذلك ،
و شحم الحنظل كذلك، و ماء السلق ان اسعط به بعد ان يعصر و ماء
البصل اذا شم او قطر فى الانف شئ قليل ، وطبيخ الكمون و الكمون
نفسه اذا شم واستنشق ، وماء الفوتنج الجبلى ان استعط به ، و ماء قثاء
الحمار و دهن الغار اذا استنشق بهما ، و دهن السوسن و دهن اللوز المر ١٠
و البورق والحرف و دهن الانجرة و الخريق الاسود و السوسن والغربيون
و ماء الفوتنج النهرى و ماء النعنع و جند بادستر اذا شم او اسعط نقى
الدماغ و يخرج الاخلاط الغليظة اللزجة منه.

لى : عطوس ينفع من امتلاء الرأس و السدر و يجفف الدماغ
و ينفض الرياح ، فيقرا درهمان ،كندس نصف ، شحم حنظل مثقال ، ١٥
شونيز ، مثقال ، مرارة كركى دانق ،مسك و كافور دانق ، مرزنجوش يابس
درهم ، ينفخ منه فى الانف ، و من ادوية السعوط ، الماميران و العدس
والمر و المرارات والصموغ والحبوب و الادهان الحارة (الف ٣٣)
او الباردة على قدر الحاجة و ماء الشابانك ، و مما ينقى الدماغ لبن اليتوع

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(١) فى ا،جالينوس.

وماء السلق و الكندس و الكبر ويدخل فى الاسعطة افيون و فربيون
و الحلتيت و وجندبادستر و المر و اللبن و المرزنجوش و الحضض و الزعفران
و الجاوشير والميعة السائلة •

عطوس نافع من اللقوة و الفالج و السكتة والصرع و ينقى الدماغ•

من تذكرة عبدوس، كندس و فلفل و جندبادستر و سداب برى ٥
و حرمل و صبر و شونيز ينخل و ينفخ منه فى الانف•

آخر نافع من ثقل الرأس البلغمى والريح شحم حنظم ، فلفل ، كندس
اسطوخودوس، جندبادستر، وهو قوى ايضا للقوة والاسترخاء و الريح
و ثقل الرأس، فلفل دار فلفل كندس زنجبيل وورق السداب و عاقر قرحا
و ميويزج و صبر و جندبادستر و صعتر فارسى [1] ينفخ فى الانف• ١٠

الكمال و التمام ، نفوخ نافع للقوة و الفالج و السكتة والسهر
و الصرع عجيب جدا قوى يؤخذ فلفل و جندبادستر و سداب يابس
و صبر و خردل و شونيز بالسوية و كندس مثلها ينعم سحقها و ينفخ منه
شيء قليل فى الانف فانه قوى عجيب•

العلل و الاعراض، العطاس ينقى الصدر و الدماغ و المنخرين و العطاس ١٥
الطبيعى يستفرغ البخار من الدماغ و الفضول •

حب نافع للقوة و الفالج و الصرع و جميع الادواء الباردة و السدر
و الرياح فى الرأس يسعط منه قدر فلفلة بماء المرزنجوش و دهن بنفسج
قليل ــ كندس و حبة سوداء جزء جزء مر و صبر من كل واحد نصف

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(١) زيد فى ا ــ و خردل •

جزء ، صمغ السداب و مرارة الكركى و جاوشير و جند باد ستر من كل واحد نصف[1] جزء فربيون ربع جزء ، وجمع بماء المرزنجوش او آذان الفار و يحبب و يسعط به بواحدة •

من آلة الشم قال جالينوس[2] العطاس يخفف ثقل الرأس العارض من بخارات غليظة قال و كثير من علل الرأس بمنزلة السهر و الاغماء اكثر شفائها بالعطاس والمعطسة •

اليهودى ،متى اصاب الرأس حر من السعوط فاسعطه بدهن بنفسج ولبن و ضع على رأسه خل خمر و بياض البيض و خطمى •

كبوب حار ، مرزنجوش،نمام ، ورق الغار،ورق الاترج ،شيح ، سعد ،يطبخ و يكب عليه •

من جورجس من كتاب الاخلاط ،قال يمكن ان يستفرغ الاخلاط من الرأس بالمشط و الدثور و الطلى بالادوية الحارة قال و العطاس يسكن متى احتمل الانسان ان يرد[3] فلم يعطس جهده •

بختيشوع،ورق البادروج ان جعل فى الانف او قطر منه عصارته و اسعط به قطع العطاس المفرط ،و اذا كبس العنق و سد المنخرين انقطع العطاس•

المران اسعط بدانق منه جلى الدماغ و اخرج عنه الارياح الغليظة •

عطوس من اختيار حنين ، يؤخذ كندس و قصب الذريرة و بزر الورد بالسوية يستعمل هذا •

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(١) ليس فى ا (٢) زيد من ا (٣) زيد من ا •

عطوس[1] جيد جدا كندس جزؤ و بزر ورد جزآن اذا كانت حدة و حرارة او خذ بزر الورد . و قصب الذريرة[1] .

سعوط ينقى الرأس جيد جدا [كناش الشاهد باصلاحى] شحم الحنظل ، اسطوخودوس، كندس، افتيمون ، يجمع و يسعط بقليل منه .

قال ابن ماسويه ان سعط بالبادروج قطع كثرة العطاس. ٥

قال و صمغ ابى غليس اذا تغرغر بمائها الذى يعتصر منها نقى الرأس من البلغم ، عصارة الكرنب محللة للبلغم اذا تغرغر بمائها مع سكنجبين .

ابن ماسوية ، قشور اصل الكبر اذا مضغ جلب البلغم من الفم جدا و كذلك ثمره ، جالينوس[1] ، قال قشر اصل الكبر يجلب البلغم مضغ او تغرغر بطبيخه ، الكندس اذا مضغ اخرج كثيرا ، اصل السوسن ١٠ الاسمانجونى يجلب الدموع.

العاقر قرحا يجلب البلغم اذا مضغ، والفلفل اذا مضغ مع الزبيب قلع البلغم .

السماق البرى ، اذا مضغ جلب البلغم قال جالينوس[2] يفعل ذلك لانه حار رطب جاذب، الخردل يقلع البلغم اذا مضغ و ان تغرغر به مع ١٥ سكنجبين جلب بلغما كثيرا .

قال ابن ماسويه ، اصل الاذخر و المصطكى والميويزج وهو حب الراسن و هو زبيب الجبل و الفلفل الاسود و الابيض و بزر الانجرة و االخردل و البورق الارمنى و شحم الحنظل و عاقر قرحا هذه جميعها اذا تغرغر بها

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(١) ليس فى ا (٢) زيد من ا (٣) زيد من ا .

با لسكنجبين العسلى نفعت اللهوات واخرجت الرطوبات اللزجة من الفم
وكذ لك يفعل ماء النعنع اذا تمضمض به و ماء الافسنتين مع سكنجبين
العسل ، و اصول السوس اذا مضغ مع المصطكى والميويزج و علك
الانباط و كذ لك الزوفا اليابس و القاقلة الكبار و الصغار و الملح الاندرانى
و النوشادر والجاوشير و حب البلسان و الحلتيت هذه كلها اذا مضغت ٥
او لطخ بها ا لحنك اخرجت ما فيه من الرطوبة اللزجة ٠

مجهول ، يتغرغر به فينزل البلغم ايارج فيقرا والعاقر قرحا و الخردل
و الميويزج و الفلفل و الدار فلفل و الزنجبيل و الخربق الابيض و نحوها
والغرور جيد (الف ٣٤) لاحدار الرطوبات و نفض ما فى الدماغ
و يجفف اللسان و البصر والسمع و اقوى ما يكون فى الحمام او بعقبه لان ١٠
المجارى حينئذ واسعة وينفع من ادواء الدماغ والحنك و الفم و الحلق
فاما من ادواء الدماغ فمثل الفالج و اللقوة والصرع و نحوها و هى طبقات
فاولاها الماء البارد وهو يقبض الحلق والحنك و يقويه و يمنع الاورام
الحارة ، والثانى الماء الحار وهو محلل للبلغم من قصب الرية، و يذ هب بالبحة
و يجلب بلغما كثيرا ، و السكنجبين وهو يقطع و يلطف و يحدر بلغما، و الخل ١٥
اقوى فى ذ لك فعلا وكذ لك المرى الجيد ينزل بلغما كثيرا و لا يسخن
كثير اسخان ، و يتغرغر بعده بماء حار عذ ب مرات ليذ هب بخشونته و يعدل
الخل بالدهن ليذ هب اضراسه و حرافته ٠

من تذ كرة عبدوس، غرغرة نافعة من الفالج و اللقوة ، خردل ، صعتر ،
زنجبيل فلفل دار فلفل عاقر قرحا ، بورق ارمنى ، فاشرسين، ايرسا ، ٢٠

ميويزج ، مرزنجوش يابس، يغرغر به بسكنجبين •

الاخلاط قال اذا اردت ان تستفرغ من الحنك استفراغا متوسطا
اعط العليل مصطكى قد عجن بالفلفل يمضغه ، و ان اردنا قويا امرناه
بالعاقر قرحا و الميويزج والغرغرة بالعسل و الخردل و الميفختج و نحو ذلك .

من جوامع النبض الصغير ـ العلل العارضة فى الدماغ اما ان يعرض ٥
فى نفس جوهره ، و اما فى العروق التى فيه ،و اما فى بطونه ، و اما فى مجارى
الروح منه الى العصب•

قال و العلل الحادثة منه فى نفس جوهره بمنزلة الورم و هذا الورم
ان كان عن مادة حادة سمى سرساما حارا و ان كان عن باردة سمى
سرساما باردا و ان كان ممتزجا فيسمى سرساما ارقيا ، و اما العلل الحادة ١٠
فى عروقه فمثل الوسواس السوداوى و السدر و الدوار ، واما فى بطونه
فمثل السداد ، و هذه ربما منعت ان تنفذ فيها شىء البتة فتكون العلة الحادثة
عنها السكات ، واما ان يقل ما ينفذ فيها فيكون الصرع، واذا حدثت السدة
فى البطنين المقدمين من المادة البلغمية فمنزلة السبات البلغمى ، او فى البطن
المؤخر بمنزلة الجمود عن مادة باردة يابسة ، او عن مزاج بارد يابس ١٥
بلا مادة ، واما العلل الحادثة فى مجاريه التى ينفذ فيها الروح النفسانى الى
العصب فهى السدد واذا انسدت حتى لا ينفذ منها شىء البتة فيها الى
العصب حدث الفالج الكلى •لى : الفالج الكلى هو عندى السكتة ، وان
سدت بعض السدد كان عنه التشنج و الروح النفسانى فى هذه العلة يجرى
الى العصب لكنه ممنوع بعض المنع، قال روفس فى كتاب اللبن ان امتلاء ٢٠
البطن ضار بالرأس جدا ، و يعلم ذلك من ان القيء و النوم و الهضم (ص ١٠٣)
يسكن الخمار و يخفف عنه•

BIOGRAPHICAL INDEX

- *ʿAbd Allāh b. al-Muqaffaʿ* (721-757 or 759 AD). He served Dāūd b ʿUmar b. Hubairah, ʿĪsā b ʿAlī, ʿAbd Allāh b ʿAlī and the caliph al-Manṣūr, translating many Greek, Indian and Persian works preserved in Pahlavi into Arabic. He was the translator of *Kalīlah wa Damnah* and the first person to translate logic books for al-Manṣūr. (Ibn al-Nadīm, 1929: 172 & 337; Ibn Abī Uṣaibiʿah, 1965: 413; Ibn al-Qifṭī, 1903: 220).

- ʿAbdūs b. Zaid (892-902 AD) was a physician who served the caliph al-Muʿtaḍid (Ibn Abi Uṣaibiʿah, 1965: 312-3; al-Ziriklī, IV, 1954-1959: 329).

- *Abū al-Ḥasan al-Ḥarrānī*: see *Thābit b Qurrah*.

- Abū Juraij, or Nastās (Anastasius) al-Rāhib, was a tenth-century Egyptian Christian physician-monk. He wrote *al-Kunnāsh* which was frequently quoted by the Arabs. But none of his works are extant (Hamarneh, 1973: 121).

- *Ahrun*, or Ahrūn, was a christian priest and physician of Alexandria. He lived in the reign of the Emperor Heraclius (610-641 AD). He is the author of *al-Kunnāsh* which was translated by Māsarjawaih (Greenhill, 1848: 163).

- *ʿAlī b ʿĪsā b Dāūd b al-Jarrāḥ*, Abū al-Ḥasan (859-945 AD). The ʿAbbāsid vizier, who was dismissed and reappointed numerous times, was well-known for his honesty and skill. He was also a patron of scholars such as Abū ʿUthmān al-Dimashqī, a translator of medical works. (Ibn al-Nadīm, 1929: 415; Ibn al-Qifṭī, 1903: 193-195 & 409; Dodge, 1970: 955).

- *Bakhtīshūʿ family*. This Syriac family, who translated and produced many medical books as well as being patron of translators, were prominent under the ʿAbbasids from the time of al-Manṣūr until the

eleventh century. Throughout this period, the following members of this family played an important role mainly as physicians:

1. Jūrjis b. Bakhtīshūᶜ (d. 769 AD): He came from Jundīshāpūr. Al-Manṣūr invited him to Baḥgdád in 765 AD and appointed him as head of his physicians.

2. Bakhtīshūᶜ b. Jūrjis (766 - 809 AD). He was appointed as chief physician by al-Mahdī to replace his father. He also worked for al-Hādī and al-Rashīd until his death.

3. Jibrā'īl b. Bakhtīshūᶜ (d. 828 AD), the physician of Jaᶜfar b. Yaḥyā the Barmakid, was appointed by al-Rashīd as his special doctor and continued in this capacity for al-Amīn and al-Ma'mūn.

4. Bakhtīshūᶜ b Jibrā'īl (d. 869 AD). He replaced his father, serving ᶜAbbāsid caliphs until he died.

5. Jibrā'īl b ᶜUbaid Allāh b Bakhtīshūᶜ (d. 1005 AD). This physician served at the ᶜAbbāsid court for 30 years.

6. Abū Sáᶜīd ᶜUbaid Allāh b. Jibrā'īl b. ᶜAbd Allāh b. Bakhtīshūᶜ (d. 1058 AD): This competent physician and author of many medical works was the last famous descendant of this family, as recorded by Ibn Abī Uṣaibīᶜah (1965; 183 - 214).

- *Banū Mūsā*. This is the name given for *the sons of Mūsā b. Shākir*: Muḥammad, Aḥmad and al-Ḥasan. In addition to being educated in the sciences, these brothers acted as patrons of learning at Baghdád during the ninth century. They became famous in the field of geometry, mechanics, dynamics, music and astronomy. Many medical works were translated under their patronage. (Ibn al-Nadīm, 1929; 373, 378-9, 397 & 409; Ibn al-Qifṭī, 1903; 441-443).

- *Bāṭrīq (al-)*, Abū Yaḥyā b. al-Bāṭrīq (died c. 796-806 AD): a translator of ancient books during the time of al-Manṣūr. He translated some medical works of Hippocrates and Galen for this caliph. He was also active during al-Ma'mūn's period when he translated some astronomicl books. (Ibn al-Nadīm, 1929: 340 & 381; Ibn Abī Uṣaibiʿah, 1965: 282; Ibn al-Qifṭī, 1903: 242; Sarton vol.I, 1927: 537; Dodge, 1970: 972).

- *Caraka*, a Kashmiran physician, flourished under the King Kanishka, who reigned probably between 120 and 162 AD (Sarton, vol.I, 1927: 284).

- *Fazārī (al-)*, Abū Isḥāq b. Ibrāhīm b. Ḥabīb or Muḥammad b. Ibrāhīm b. Muḥammad b. Ḥabīb: astronomer of al-Manṣūr's court and the inventor of the astrolabe. According to some accounts, he died in 796 AD, but Ibn Ḥajr says that he died in 803 AD (188 AH). The latter report may be true because al-Fazārī was still active during the time of al-Ma'mūn (813 - 833 AD). (Ibn al-Nadīm, 1929: 371; al-Ziriklī, vol.VI, 1954-9: 181; Rifāʿī, vol.I, 1928: 376).

- *Ḥajjāj (al-) b. Maṭar*. His full name is al-Ḥajjāj b. Yūsuf b. Maṭar al-Hāsib. This translator of Greek works, especially in mathematics, was active during the times of al-Rashīd and al-Ma'mūn (786-833 AD). (Ibn al-Nadīm, 1929: 339, 341, 352, 371 & 374; Ibn al-Qifṭī, 1903: 42 & 98; Dodge, 1970: 634 & 991).

- *Ḥājjī Khalīfah*, Musṭafā b. ʿAbd Allāh (1608-1067 AD) - a Turk born in Constantinople in which he died - was a famous Muslim encyclopedist. *Kashf al-Ẓunūn*, the celebrated Arabic encyclopedia, is the author's most important work (Ḥājī Khalīfah, vol.I, 1837: see Introduction; Browne, 1921: 3; Ency. Islam, vol.II, 1927: 204-5).

- *Ḥubaish b. al-Ḥasan al-Aᶜsam al-Dimashqī*. This translator of Syriac books was a pupil, helper and nephew of Ḥunain b. Isḥāq. He was patronised by the *sons of Mūsā b. Shākir*. He translated many medical books into Arabic. (Ibn al-Nadīm, 1929: 340, 401-405, 408, 409, 414; Ibn Abī Uṣaibiᶜah, 1965: 276; Ibn al-Qifṭī, 1903: 30, 95, 116, 128-132, 173 & 177).

- *Ḥunain b. Isḥāq al-ᶜIbādī*, Abū Zayd (809-873 AD). This physician of al-Hīrah was the most famous translator of scientific works of his time at Baghdād. He translated and composed a large number of medical works. (Ibn al-Nadīm, 1929: 409, Ibn Abī Uṣaibiᶜah, 1965: 257-273; Ibn al-Qifṭī, 1903: 171; Ibn Khallikān, vol.II, 1969: 209).

- *Ibn Abī Uṣaibiᶜah*, Muwaffiq al-Dīn Abū al-ᶜAbbās Aḥmad b. al-Qāsim (1203-1269 AD). He was a physician and historian of the medical sciences. As his name indicates, he was born in Damascus but became active in Cairo. His *ᶜUyūn al-Anbā' fī Ṭabaqāt al-Aṭibbā'* is one of the most authentic sources of medical history. (Ibn Abī Uṣaibiᶜah, 1965: 5; Elgood, 1951: 328).

- *Ibn al-ᶜAmid*, Abu al-Faḍl Muḥammad b. Abī ᶜAbd Allāh al-Kātib, was appointed vizier of the Persian ruler, Rukn al-Daulah, in 939 AD, and died about 960. He was not only a statesman and warrior but also a renowned scholar. He was responsible for the compilation and publication of *al-Ḥāwī* (Meyerhof, 1935: 329; see also *Encyclopedia of Islam*, II, 360).

- *Ibn Dahn* or Appan Dhan. This Indian physician was employed by the Barmakid family. In the late 8th and early 9th century, he translated some Indian books into Arabic. (Ibn al-Nadīm, 1929: 342 & 421; Dodge, 1970: 977).

- *Ibn Juljul*, Sulaimān b. al-Ḥasan al-Andalusī: a native of Andalus, was a physician and a writer on medical history. His *magnum opus*, *Ṭabaqāt al-Aṭibbā' wa al-Ḥukamā'* was written in 987 AD. This was the first book of the Andalus Caliphate on the subject of the history of physicians. (Ibn al-Qifṭī, 1903: 190; Ibn Juljul, 1955 - see Introduction by the editor).

- *Ibn al-Nadīm*, Abū al-Faraj Muḥammad b. Isḥāq b. Muḥammad b. Isḥāq (ca.935-990 AD) was one of greatest historians living at Baghdád. His encyclopedic *al-Fihrist*, completed by the year of 988 AD, was one of the most authoritative sources of Muslim history and regarded as 'a true record of civilisation', and referred to by orientalis as well as other Muslim historians. (Ibn Abī Uṣaibi'ah, 1965; *passim*; Ibn al-Qifṭī, 1903; *passim*; Dodge, 1970 - see *Foreword* and *Introduction*; Browne, 1921: 6; Elgood, 1951: 306).

- Ibn Sarābiyūn, or Sarāfiyūn, is Yaḥyā b Sarāfiyūn, a Muslim physician and geographer, who flourished in Mesopotamia at the beginning of the tenth century (Sarton, vol.I, 1927: 635).

- *Ibn Shahdā*, an inhabitant of al-Karkh, a suburb of Baghdad, was a translator of Greek works, especially of Hippocrates and Galen, into Syriac and Arabic. He seems to have lived at the beginning of the ninth century (Meyerhof, 1926: 704).

- *Ibn Sīnā*, Abū 'Alī Ḥusain b. 'Abd Allāh b. Sīnā (937-1037 AD), a man from Bukhara, a province of Iran, was the most famous Muslim physician and philosopher, so much so that he was called the 'Prince

of Physicians'. His most important medical work is *al-Qānūn fī al-Ṭibb*. (Campbell, 1926; 77-78).

- *Ibn Waḥshiyah*, Abū Bakr Aḥmad b. ᶜAlī al-Kaldānī, was a Nabatean who lived in ninth and early tenth century and a promoter of Nabatean learning. He wrote on alchemy, astrology, toxicology and agriculture. His remarkable works are *al-Filāḥah* and *al-Sumūm*, which were completed in the early tenth century. (In al-Nadīm, 1929; 504; Hamarneh, 1973; 36; Dodge, 1970; 1121).

- *ᶜĪsā b. Yaḥyā* b. Ibrāhīm was a pupil of Ḥunain b. Isḥāq and a translator of Greek works into Syriac and Arabic (In al-Nadīm, 1929; 401-3, 405, 407 & 415; Ibn al-Qifṭī, 1903; 249).

- *Isḥāq b. Sulaimān* (d. after 794 AD) was an ᶜAbbāsid governor. During al-Rashīd, he was appointed as the governor of al-Madīnah (786 AD), of al-Sind and Mukrān (790 AD) and Egypt (793 AD). (Al-Ziriklī, 1954-9, vol. I; 287).

- *Iṣṭafan b. Basīl*, called Stephen son of Basīl by the western world, was a translator of Greek medical works at Baghdád in the middle of the ninth century. (Ibn al-Nadīm, 1929; 404 & 408; Ibn Abī Uṣaibiᶜah, 1965; 281 & 493; Ibn al-Qifṭī, 1903; 35, 74, 130-132 & 171; Dodge, 1970; 1019).

- *Jaudar* was an ancient Indian physician and philosopher. The exact time when he lived is unknown (Ibn Abī Uṣaibīᶜah, 1965; 474).

- *Jauharī (al-)*, al-ᶜAbbās b. Saᶜīd, was a famous astronomer and mathematician who served al-Ma'mūn. He wrote, translated, and commented on some scientific books. (In al-Nadīm, 1929; 379; Ibn Abī Uṣaibiᶜah, 1965; 474; Ibn al-Qifṭī, 1903; 64 and 219).

- *Jibrā'īl* II - see *Bakhtīshūᶜ family*.

- *Job of Edessa*, or Ayyūb al-Ruhāwī al-Abrash, who lived probably in the first half of the ninth century, was an early forerunner of the

great translators of Greek works, mostly Galenic, into Syriac (Meyerhof, 1926: 703-4).

- *Jūrjis b. Bakhtīshūᶜ* - see *Bakhtīshūᶜ-family*.

- *Kankah* was one of the most famous ancient Indian philosophers; he had a deep knowledge of medicine and compiled several books. The exact time when he lived is unknown (Ibn Abī ᶜUṣaybiᶜah, 1965: 473).

- *Khālid b. Yazīd b. Muᶜāwiyah b. Abī Ṣufiyān* (d. 704 AD): Umayyad caliph who succeeded his father in 683 AD. He reigned for three months and then resigned. Later he acted as a patron of scientific studies. He was the first Muslim to commence the translation of foreign medical, mechanical, astronomical and chemical books into Arabic. He died in Damascus. (Ibn al-Nadīm, 1929: 338 & 497; Al-Ziriklī, vol.II, 1954-9: 343).

- *Kindi (al-)*, Abu Yusuf Yaᶜqub b Ishaq (ca. 800-870 AD), an Arab scholar who was known as the 'philosopher of the Arabs'. He was competent in a variety of sciences, such as logic, philosophy, mathematics, music, astronomy and medicine. (In al-Nadīm, 1929: 357; Ibn al-Qifti, 1903: 366-378; Levey, 1966: 4).

- *Mādhavakara*, a Hindu physician, flourished at an unknown time in the eight or ninth century AD (Sarton, vol.I, 1927: 537).

- *Mankah* or Manikya, an Indian physician and translator of medical works who travelled from India to ᶜIraq at al-Rashīd's period, was one of a group employed by Isḥāq b. Sulaimān b. ᶜAlī al-Hāshimī and Yaḥyā the Barmakid. He translated some Indian medical books into Persian and Arabic. (Ibn Abī Uṣaibiᶜah, 1965: 475; ᶜAbd Ḥayy, vol.I, 1962: 46; Askari, 1957: 9).

- *Māsarjawaih*, or Māsarjis, or al-Yahūdī, was a celebrated Jewish physician, ~~who was a native of Syria, and lived at Basrah in the reign of the Umayyad Caliph Marwān I (683-5 AD) (Greenhill, 1848: 161-2), or~~ in the first half of the 8th century (Meyerhof, 1937: 22).

He probably became a Muslim and joined the ᶜAbbāsids in ᶜIraq (Dodge, 1970: 1041). He translated many Syriac medical works into Arabic. One of them is *al-Kunnāsh* (the *Pandect)* of Ahrun, which is several times quoted by al-Rāzī (Ibn Nadīm, 1929: 413).

- *Muḥammad b. ᶜAbd al-Malik b ᶜAbān al-Zayyāt*, Abū Jaᶜafar (d. 847/8). He was an ᶜAbbāsid vizier, poet and patron of translation; some medical books were translated under his patronage. (Ibn al-Nadīm, 1929: 404; al-Ṭabarī, vol.XI, 1964: 1183; Ibn Abī Uṣaibiᶜah, 1965: 251; Dodge, 1970: 683 & 1050).

- *Qaḥṭabī* (al-), Aḥmad b. Muḥammad, was an eight-century writer and a patron of learning (In al-Nadīm, 1929: 408 & 479; Dodge, 1970: 1076).

- *Qāsim (al-) b. ᶜUbaid Allāh b. Sulaimān* (d. 904 AD) was the vizier of two ᶜAbbāsid caliphs - al-Muᶜtaḍid (892-902 AD) and al-Muktafī (902-908 AD). He was also a poet, translator and patron of learning. (Ibn al-Nadīm, 1929: 415; Dodge, 1970: 1078).

- *Qusṭā b. Lūqā al-Baᶜlabakī* (d. 912 A D). This translator, who lived during the reign of the Caliph al-Muqtadir, excelled in many sciences such as medicine, philosophy, geometry, mathematics and music. He was competent in Greek, Syriac and Arabic and translated, commented on, composed and produced a large number of scientific works. He died in Armenia while staying with kings there. (Ibn al-Nadīm, 1929: 341, 410-411; Ibn Abī Uṣaibiᶜah, 1965: 329; Al-Ziriklī, vol.VI, 1954-9: 40).

- Paulus, who was born on the island of Aegina, flourished in Alexander about 640 AD, when Muslims conquered this city (Sarton I, 1927: 479).

- Pythagoras of Samos (532-497/6 BC), an mathematician and philosopher who lived between 532 and 497 BC (Sarton, vol.I, 1927: 73).

- Rufus of Ephesus, who flourished under Trajan in Rome and Egypt, was Greek anatomist and the greatest Greek physician of the Roman Empire after Galen (Sarton, vol.I, 1927: 282).

- *Rūsā* was an ancient Indian woman physician. The exact time when she lived is not known (Ibn al-Nadīm, 1929: 421; Ibn Abī Uṣaibiᶜah, 1965: 473-4).

- *Ṣāliḥ b. Bahlah* was a well-known Indian physician in ᶜIraq. He was introduced to al-Rashīd by Jaᶜfar b. Yaḥyā the Barmakid. (Ibn Abī Uṣaibīᶜah, 1965: 475-477).

- *Salmā* or *Salmān*. He was a ṣāḥib (master) of Bait al-Ḥikmah during al-Ma'mūn's reign. (Ibn al-Nadīm, 1929: 339, Ibn Abī Uṣaibiᶜah, 1965 : 260; Amīn, vol.I, 1956: 203).

- *Ṣanjahal* was an ancient Indian physician and astronomer. The exact time when he lived is unknown (Ibn Abī Uṣaibiᶜah, 1965: 473).

- *Sergios of Rêsh ᶜAinâ* (d.536 AD) was a Christian priest who had studied medicine and Greek at Alexandria. He was the first to translate Greek medical works into an oriental language, i.e. Syriac (Meyerhof, 1926: 703).

- *Shānāq* was a famous ancient Indian physician and philosopher. The exact time when he lived is unknown (Ibn Abī Uṣaibiᶜah, 1965: 474).

- *Suśrutā*, an ancient Indian surgeon, flourished during the sixth century BC (Sarton, vol.I, 1927: 76).

- *Ṭabarī (al-)*, Abū al-Ḥasan b. ᶜAlī b.Sahl b. Rabban, was a physician from Raiy who served al-Muᶜtaṣim (833-42), al-Wāthiq (842-47) and al-Mutawakkil (847-61 AD). He was born about 810 and died some time after 850 AD. His principal work is *Firdaus al-Ḥikmah*, which is several times quoted by al-Rāzī (Ibn al-Nadīm, 1929: 412; Ibn Abī Uṣaibīᶜah, 1965: 414; Meyerhof, 1931: 11; Meyerhof, 1944(b): 1857).

- *Thābit b. Qurrah*, Abū al-Ḥasan al-Ḥarrānī (835-900 AD), was a scholar and translator of varies sciences such as medicine, philosophy, logic, mathematics, geometry and astronomy. The Sabean of al-Harrán was brought by Muḥammad b. Mūsā b. Shākir back to Baghdád.

The patron then educated and introduced him to the Caliph al-Muᶜtaḍid. Thābit translated and produced many scientific books. (Ibn al-Nadīm, 1929: 380; Ibn Abī Uṣaibiᶜah, 1965: 295-304; Ibn al-Qifṭī, 1903: 115-122).

- *Tūqashtal* or *Nūfashal* was an ancient Indian physician. The exact time when he lived is unknown (In al-Nadīm, 1929: 421; Ibn Abī Uṣaibīᶜah, 1965: 473-4).

- *Vṛinda*, a Hindu physician, flourished during the eight or ninth century AD. It is supposed that Vṛinda and Mādhavakara are but two names of the same person. (Sarton, I, 1927: 537).

- *Yaḥyā b. al-Baṭrīq*, Abū Zakariyyā, was also known as Yuḥannā. He worked with al-Ḥasan b. Sahl (d. 830 AD), a writer and *ṣāḥib* (master) of *Bait al-Ḥikmah*, translating Greek scientific texts (Ibn al-Nadīm, 1929: 182; Dodge, 1970: 972; al-Ziriklī, 1954-9, vol.III: 211).

- *Yaᶜqūbī* (al-), Aḥmad b. Abī Yaᶜqūb Isḥāq b. Jaᶜfar b. Wahb b. Wāḍiḥ al-Kātib (d. 897), was a great Muslim historian and geographer. He was an Imāmī Shiᶜite. He died in Egypt. (Enc. Islam, IV: 1924).

- Yūḥannā b. Māsawaih, Abū Zakariyyā (777-857 AD): a Syrian who was also called Mesué Major. This Nestorian physician was an author and translator of Greek medical works. Al-Rashīd appointed him as the head of the translators in his court. He also served al-Ma'mūn, al-Muᶜtaṣim al-Wāthiq and al-Mutawakkil. Many medical books were translated and produced by him. (Ibn al-Nadīm, 1929: 411-412; Al-Ziriklī, vol.IX, 1954-9: 279; Dodge, 1970: 1041).

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INDEX OF PERSONAL NAMES

INDEX OF DRUGS