bodies and to remove their illnesses. The ones who most need this book are the doctors, for the required treatment cannot be known without a knowledge of the temperament of the country and what particularly occurs in it.

I have divided the work into fifteen chapters. Each chapter deals with a single theme, so that it is easy for one to understand all the ideas in the work. Chapter 1: On the description of Egypt and its temperament; Chapter 2: On the description of the various kinds of air in Egypt and what is generated in the land of Egypt; Chapter 3: On the six causes determining health and illness in Egypt; Chapter 4: On the seasons of the year in Egypt; [2b] Chapter 5: On the incorrectness of most of Ibn al-Jazzār's reasons for the unhealthy air in Egypt;[2] Chapter 6: On the peculiarity of the capital of Egypt today concerning its air and all its conditions; Chapter 7: On the knowledge about the causes of pestilence[3] and all the epidemic diseases;[4] Chapter 8: A summary of what has been said and a commentary on the six causes that determine health and sickness; Chapter 9: On the general stratagem for preserving health and the treatment of illnesses; Chapter 10: On what is necessary for doctors to do for the body in Egypt; Chapter 11: On the prescription of the body's regimen in Egypt; Chapter 12: On the means of improving the badness of the air, water, and food in Egypt; Chapter 13: On the means of preventing injury from epidemic diseases in Egypt; Chapter 14: On the prescriptions used to prevent injury and to preserve the body; and Chapter 15: On the desirability of choosing to live in Egypt although it would have a bad effect on the body. [3a].

[2]Lane, s.v. "wakhamun:" "A tainted condition of the air, engendering pestilential diseases."

[3]*Wabā'*, see Dols, *The Black Death*, pp. 315–316. Conrad, ("*Ṭā'ūn* and *Wabā'*. Conceptions of Plague and Pestilence in Early Islam," pp. 268–307) has persuasively argued that *wabā'* was conceived as a corruption of the air, land, or water, while *ṭā'ūn* was a specific affliction directly attacking man. This is entirely consistent with Ibn Riḍwān's etiology of epidemic illnesses. See also Peter Bachmann, "Quelques remarques sur le commentaire du premier livre des 'Epidemies' par Ibn an-Nafīs," *Actas do IV Congresso de Estudos Árabes e Islâmicos* (Leiden, 1971), pp. 301–309.

[4]*Al-amrāḍ al-wāfidah*, see Ullmann, *Islamic Medicine*, p. 89f.

· 1 ·

On the Description of Egypt and Its Temperament

Miṣr,[1] according to the narrators, is the name of one of the sons of Noah[2] (on him be peace). They report that Miṣr dwelt in this land, raised a family, and made it prosperous. Therefore, the country was called by his name [Miṣr=Egypt]. Today this name designates the land that the Nile inundates.[3]

The country is delimited by four borders. The eastern border is determined by the fact that the sun rises on the most distant habitation in the east eight and one-third hours before it rises over Egypt. The western boundary is determined by the fact that the sun sets on Egypt three and two-thirds hours before it sets on the western end of the habitation. Consequently, this land is in the western half of the inhabited world, according to Hippocrates[4] and Ptolemy.[5] There is less heat and greater moisture in the western half than in the eastern, as the former is allotted to the moon and the latter is allotted to the sun. This is because the sun rises on the eastern half before it rises on the western

[1]A proper name denoting the eponym of Egypt, the ancestor of the Berbers and the Copts. In accordance with the biblical genealogy (Genesis x: 1 sqq.), Miṣr is called the son of Ḥām, the son of Nūḥ (*EI*[1], s.v. "Miṣr" [A. J. Wensinck]); see also al-Mas'ūdī, *Les Prairies d'Or*, trans. A. C. Barbier de Meynard and A.-J.-B. Paret de Courteille (Paris, 1861–77), 2:304f.; Ibn Taghrībirdhī, *an-Nujūm* (Cairo, 1929), 1:48–50; al-Idrīsī, *Opus geographicum* (Rome, 1972), 3:322.

[2]See *EI*[1], s.v. "Nūḥ" (Bernhard Heller).

[3]In the medieval period, "Miṣr" referred as a proper name both to Egypt as a country and to its capital, al-Fusṭāṭ/Cairo. For the discussion of this matter, see *EI*[1], s.v. "Miṣr"; Abu-Lughod, *Cairo*, p. 6, n. 12; A. Grohmann, *Studien zur historischen Geographie und Verwaltung des frühmittelalterliben Ägypten* (Vienna, 1959), p. 7f.

[4]For Ibn Riḍwān's view of the name "Hippocrates" and the division of the world into eastern and western halves, see Dietrich, *'Alī ibn Riḍwān*, pp. 18–21 and 22–25, respectively.

[5]Ptolemy (Claudius Ptolemaeus), astronomer, mathematician, and geographer (fl. A.D. 127–148). His major work, the *Almagest*, is a complete textbook of astronomy and it dominated astronomical theory in the Middle Ages. Ptolemy's *Tetrabiblos*, which was almost as influential in astrology as the *Almagest* was in its field, provided a scientific basis for the various practices of the astrologers. His *Geography* was, on the whole, the most accurate of ancient geographical works and the most comprehensive. His numerous works were translated into Arabic and exerted considerable

half, [3b] while the moon appears in the western half before the eastern half.[6] Some of the Ancients claimed that Egypt was naturally in the center of the civilized world.[7] But by measurement, as we have already described, it is in the western half.

The third boundary is the southern, and it is the closest part of this land to the equator in the northward direction. The best-known city of this region is Aswān,[8] and the distance of this city from the equator is 21½ degrees, on the basis of the full extent of the earth's circumference being 360 degrees.[9] It is clear that the sun is directly over the heads of the people in Aswān twice a year: when it is at the end of Gemini and the beginning of Cancer.[10] At these two times nothing standing in this place at midday casts a shadow at all. Heat, dryness, and burning are, consequently, dominant over the temperament of this city because the sun dries up the moisture there. Thus, the inhabitants' color is black, and their hair is [4a] kinky on account of the scorching of their land.[11]

The fourth boundary is the northern; it is the most distant in Egypt from the equator in the northward direction and is at the Mediterranean

influence on Arabic science. Specifically, we know that Ibn Riḍwān was well acquainted with the *Geography* and that he wrote a commentary on the *Tetrabiblos*. See Honigmann, *Die sieben Klimata*, pp. 112–183; E. H. Bunbury, *A History of Ancient Geography* (New York, 1959), 2:546–644; *EI*¹ *Supplement*, s.v. "Djughrāfiyā" (J. H. Kramers). Concerning the division of the inhabited world, Ptolemy made the division of Africa and Asia along a line running from a point on the Mediterranean coast between al-'Arish and Rāfah to the head of the Gulf of Suez; see John Ball, *Egypt in the Classical Geographers* (Cairo, 1942), p. 100.

[6]See Claudius Ptolemaeus, *Tetrabiblos*, trans. J. M. Ashmand (Chicago, 1936), pp. 22, 41f.

[7]See G. Maspero, *The Dawn of Civilization* (London, 1894), p. 16; Ball, *Egypt in the Classical Geographers*.

[8]Aswān is situated at 24° 5′ 3″ N. on the east bank of the Nile to the north of the first cataract; it is the capital of the province of Nubia. See *EI*¹, s.v. "Assuan" (C. H. Becker); al-Maqrīzī, *al-Khiṭaṭ*, 1:197–199; Nāṣir-i Khusraw, pp. 116, 175f.; Ibn Ḥawqal, 1:147, 156; R. B. Serjeant, *Islamic Textiles* (Beirut, 1972), p. 156.

[9]Ibn Riḍwān gives the latitutes only for Aswān, Tinnīs, and al-Fusṭāṭ/Cairo (see below). The latitude for Aswān does not agree with Ptolemy's figure of 23° 50′ (Ptolemaeus, *Geography*, trans. E. L. Stevenson [New York, 1932], p. 104). Apparently, al-Battānī's astronomical work is the only one that gives Ibn Riḍwān's latitudes for all three cities (*Opus astronomicum*, ed. and trans. C. A. Nallino [Rome, 1899–1907], 2:43–45; 3:239). Because al-Battānī's (d. 317/929) astronomical work had considerable influence, it is possible that it or a derivative work was the source for Ibn Riḍwān's data (*EI*², s.v. "al-Battānī" [C. A. Nallino]).

[10]Cf. Claudius Ptolemaeus, *The Almagest*, trans. R. Catesby Taliaferro (Chicago, 1952), pp. 14–42.

[11]Cf. Ptolemaeus, *Tetrabiblos*, p. 41; Galen, *De temperamentis libri III*, ed. Helmreich, pp. 68, 74; *A Translation of Galen's Hygiene*, p. 26; Ḥunayn, p. 76; *Avicenna's Poem on Medicine*, trans. H. C. Krueger (Springfield, Ill., 1963), p. 18; de Sacy, p. 5.

Sea. On the Egyptian coast are many cities,[12] such as Alexandria,[13] Rosetta,[14] Damietta,[15] Tinnīs,[16] and al-Faramā.[17] The distance of Tinnīs from the equator is 31⅓ degrees.

This distance is at the end of the third clime[18] and the beginning of the fourth.[19] Therefore, the sun is neither entirely remote from nor entirely near to the people there. Temperateness is their dominant characteristic, with a slight tendency toward hotness, for the most temperate place for good health in the inhabited countries is in the

[12]See William Popper, *Egypt and Syria Under the Circassian Sultans 1382–1468 A.D.: Systematic Notes to Ibn Taghrī Birdī's Chronicles of Egypt*, University of California Publications in Semitic Philology, vol. 15 (Berkeley, 1955), maps 2, 4; Serjeant, *Islamic Textiles*, map 13.

[13]Alexandria was the major seaport of Egypt, lying at the western angle of the Delta (30° 11′ N., 29° 51′ E.); it was founded in 332 B.C. by Alexander the Great. The fortified city was captured by the Arabs in 21/642 and retained its commercial and strategic importance. The international transit trade as well as local industry, particularly cloth manufacture, made Alexandria a cosmopolitan city and an important source of revenue for the state. Under the Fāṭimids, the city was administratively independent, reflecting its ancient status in Roman law. See *EI*², s.v. "al-Iskandariyya" (S. Labib); Ibn Ḥawqal, 1:148–150; al-Maqrīzī, *al-Khiṭaṭ*, 1:144f.; al-Idrīsī, *Opus geographicum*, 3:317–322; Nāṣir-i Khusraw, p. 119f.; de Sacy; p. 3 et passim; Serjeant, *Islamic Textiles*, s.v. "Alexandria;" al-Battānī, *Opus astronomicum*, 2:38, no. 109.

[14]Rashīd or Rashīdīyah is situated at 31° 24′ N., 30° 24′ E., on the western bank of the Rosetta (Baḥr al-Gharb) branch of the Nile (the ancient Bolbitine) about 10 miles above its mouth, which is known as al-Armūsīyah. The fortified city flourished as a commercial and military center until the early nineteenth century. See *EI*¹, s.v. "Rosetta" (A. S. Atiya); Serjeant, *Islamic Textiles*, p. 62.

[15]Damyāṭ is situated on the eastern branch (Baḥr ash-Sharq) of the Nile, near its mouth. An important town before the Muslim conquest, it survived but suffered repeatedly from naval raids. In 238/853 al-Mutawakkil ordered the construction of a fortress at Damietta as part of a general plan to fortify the Mediterranean coast. The city played a particularly important role in the conflicts during the Crusades. The walls and settlements were demolished by the Mamlūks in 648/1250-51. Previously, Damietta was famous for its textile industry. See *EI*², s.v. "Dimyāṭ" (P. M. Holt); Ibn Ḥawqal, 1:150–151, 154; al-Maqrīzī, *al-Khiṭaṭ*, 1:213–226; Serjeant, *Islamic Textiles*, s.v. "Damietta;" al-Battānī, *Opus astronomicum*, 2:43, no. 177.

[16]Muḥammad Ramzī, *al-Qāmūs al-jughrāfī lil-bilād al-Miṣrīyah* (Cairo, 1953), 1:197f.; Ibn Ḥawqal, 1:150f., 154, 158; al-Maqrīzī, *al-Khiṭaṭ*, 1:176–182; Nāṣir-i Khusraw, pp. 109–114; al-Battānī, *Opus astronomicum*, 2:45, no. 194; Serjeant, *Islamic Textiles*, s.v. "Tinnīs."

[17]Or Pelusium. See Ramzī, *al-Qāmūs*, 1:91f.; al-Maqrīzī, *al-Khiṭaṭ*, 1:211f.; al-Battānī, *Opus astronomicum*, 2:45, no. 195; Serjeant, *Islamic Textiles*, s.v. "al-Faramā;" Ibn Ḥawqal, 1:143, 154, 158; Ibn Ḥawqal and others give al-Faramā as the site of Galen's burial place (p. 158).

[18]The inhabited world was divided into seven latitudinal climes (*aqālīm*), beginning at the equator, according to the Greek tradition; this division was largely attributed to Ptolemy in the Islamic era. See Honigmann, *Die sieben Klimata* for a detailed description of the matter; see also *EI*², s.v. "Iḳlīm" (A. Miquel), "Djughrāfiyā" (S. M. Ahmad); *EI*¹ *Supplement*, s.v. "Djughrāfiyā" (J. H. Kramers); Miquel, *La Géographie humaine du monde musulman*, 1:12, 70 et passim; C. Schony, "Geography of the Muslims of the Middle Ages," *Geographical Review* 14 (1924):257–269; Ziauddin Alavi, "Physical Geography of the Arabs in the Xth Century A.D," *Indian Geographical Journal* 22 (Madras, 1947):53–61. For the division of Egypt into climes, see Ibn Ḥawqal, 1:146, map 6.

[19]See al-Khʷārazmī, *Das Kitāb Ṣūrat al-Arḍ*, ed. Hans von Mžik (Leiden, 1926), pl. 3.

center of the fourth clime.[20] The sea is adjacent to this region; its close association creates a balance between the heat and cold, with a slight tendency toward moisture. The humid condition is predominant, but it is neither hot nor cold. Therefore, the inhabitants' color is brown; their manner is mild;[21] and their hair is lank.

If the climate of the southern region of Egypt is characterized by scorching [4b] and the northern region by temperateness with a slight inclination toward warmth, what lies between the two areas is dominated by heat. The strength of its heat is in proportion to its distance from Aswān or, conversely, its nearness to the Mediterranean. Because of this, Hippocrates and Galen said that the dominant temperament of Egypt is heat.[22]

As we have delimited the country and mentioned its temperament, we will now begin with its description. This land is confined between two mountain ranges, which run from south to north and are not high. One is greater than the other, and the greater is the eastern range, known as the Muqaṭṭam Mountains.[23] As for the western range, it is small and discontinuous. The distance between them narrows in some places and widens in others. It is widest in the lowest part of Egypt. These two mountain ranges are barren; no plants grow on them, as they do on mountains in other countries, because the soil is boraxine[24] and saline.[25] The nature of the clay of Egypt is such that it absorbs the moisture, which is necessary for vegetation. [5a] Also, the heat's intensity dissolves the pleasant moisture from the mountains. The mountains do not receive enough rain to make up for this sweet moisture. Therefore, the well water in the two ranges is salty. The mountains burn the animals and other beings that are buried in them, for there is, by nature, little rain in Egypt.[26]

[20] A central theme of the geographical literature, and of *adab* writings generally, is that the fourth clime is the most desirable and represents "moderation in all things." See *EI*², s.v. "Iḳlīm"; *Avicenna's Poem on Medicine*, p. 18.

[21] Dār al-Kutub al-Miṣrīyah MS no. 18 *(ibb*: "Their eyes are bluish black."

[22] Cf. *Hippocrates, Airs, Waters and Places* 18, *A Translation of Galen's Hygiene*, p. 75; Kühn, 17B:597; Ptolemy, *Tetrabiblos*, p. 42; Galen, *De temperamentis libri III*, ed. Helmreich, p. 68.

[23] Al-Muqaṭṭam is the part of the range of hills that lies east of Cairo; from Cairo the hills take a northeasterly direction, bordering the Nile Delta to the southeast. They reach a height of about 600 feet and are composed, as is the greater part of North African mountains, of limestone. The name is neither pre-Islamic nor a true Arabic word; the geographers give different explanations of its meaning. The origin of the name is probably derived from Jewish legendary traditions; it acquired a real geographical identity only after the foundation of al-Fusṭāṭ. Its proximity to the Nile has deeply influenced the territorial expansion of al-Fusṭāṭ and later of Cairo. See *EI*¹, s.v. "al-Muḳaṭṭam" (J. H. Kramers); de Sacy, pp. 5–6, n. 11; Ibn Ḥawqal, 1:147f.

[24] *Bawraq* "is natron, sesqui-carbonate of soda, a compound of various salts containing mainly sodium carbonate (soda). Derived from the Persian *būra*, the term does not indicate borax in the modern sense (Natrium biboracicum), but has given its name to it" (*EI*² *Supplement*, s.v. "Bawrak" [A. Dietrich]).

[25] Cf. Ibn Ḥawqal, 1:144.

The Muqaṭṭam Mountains in the east hold back the east wind, so that a pure east wind is never seen in al-Fusṭāṭ.[27] But when the east wind does blow, it is a side wind that comes either from the northeast or the southeast. This wind is hot and humid; it is the most balanced and the best wind because of its similarity to the temperament of the bodies of the animals. Generally, Egypt lacks the excellence of the east wind; yet, the places in Egypt where this wind does blow are better than others, such as Alexandria, Tinnīs, and Damietta.[28] These two mountain ranges also impede the radiation of the sun on the land, when the sun reaches the horizon. Therefore, the length of sunlight on this land is less than its normal duration. Similarly, the mountains cause [5b] the stillness and coarseness of the air.

There are a great many animals and plants in Egypt. It is almost impossible to find a place devoid of them. It is a convulsed land, as Afūrus said.[29] The evidence of the cracking can be seen in the condition of the mud when the Nile retreats. When the heat evaporates the moisture in the soil, the earth cracks into great fissures. It was apparent to the Ancients that places with many animals and plants have a great deal of corruption as well. In this land, the heat of its temperament, the weakness to decay, and the large quantity of animals and plants combine; thus, incineration becomes inevitable.[30] As a result, its clay and the earth become black. The soil that is close to the mountains is boraxine or saline. Black and gray vapors also appear in this land in the evening, especially in the summer.

Egypt consists of many distinct parts, each of which is distinguished by something. The cause of the diversity is the country's narrowness, while its length encompasses [6a] the width of the second and third

[26] For the humidity and rains in Cairo, see Clerget, *Le Caire*, 1:74–81. Cf. ath-Tha'ālibī, *The Laṭā'if al-ma'ārif of Tha'ālibī*, trans. C. E. Bosworth (Edinburgh, 1968), p. 121.

[27] Concerning the winds, see Clerget, *Le Caire*, 1:69–73.

[28] *Hippocrates*, 1:75, 77; cf. Levey, "Medical Ethics of Medieval Islam," p. 32f.

[29] Ephorus of Cyme, ca. 405–330 B.C., was the most important Greek historian of the fourth century, apart from Xenophon; see G. L. Barber, *The Historian Ephorus* (Cambridge, 1935). This quotation was apparently taken from Galen; see Kühn, 19:301, ll. 3–6.

[30] For the underlying theory of generation and destruction, especially the decay or putrefaction of living matter by heat, see Aristotle, *Meteorologica*, ed. & trans. H. D. P. Lee (London, 1952), pp. 290–297.

climes. In Upper Egypt there are date palms, acacia, thickets of reeds and papyrus, places where charcoal is made, and very many other things. In al-Fayyūm[31] there are swamps, thickets of reeds, rice, places where flax is left to decay, and many other things.[32] And in Lower Egypt there are varieties of plants, such as the colocasia,[33] bananas,[34] and so forth. On the whole, every place in Egypt has something in which it specializes and in which it is superior to the other regions.[35]

The Nile flows by many peoples from the Sūdān.[36] Then, it comes to Egypt, having washed away the putrid substances and filth in the Sūdān. Passing through Egypt, it cleaves the country in its center from the south to the north, where it enters the Mediterranean. The beginning of the inundation is in the summer, and its highest level is in the autumn.[37]

Much moisture often ascends by invisible dissolution from the Nile at the time of its rising. This therefore lessens the aridity of the summer and autumn. When the river expands, it floods Egypt and washes from

[31]Al-Fayyūm derives its name from the Coptic, *Phiom*, "the Sea." It is a roughly triangular depression, about 35 miles from north to south and about 49 miles from east to west. It is in Middle Egypt, lying in the Libyan Desert, west of the Nile Valley. The cliffs separating it from the river valley are breached at one point, thereby admitting a stream (Khalīj al-Manhā) which branches off from the Nile near Asyūṭ. On entering the Fayyūm, the waters are canalized for irrigation, the surplus escaping to form a permanent lake, now known as Birkat Qārūn. The principal town and provincial capital is Madīnat al-Fayyūm. At the beginning of the Muslim era, the region seems to have been fertile and prosperous; rice and flax were among its chief products, as Ibn Riḍwān mentions. See *EI*², s.v. "al-Fayyūm" (P. M. Holt); Ibn Ḥawqal, 1:145, 157f.; al-Maqrīzī, *al-Khiṭaṭ*, 1:p. 241ff.; al-Idrīsī, *Opus geographicum*, 3:327ff.

[32]For rice cultivation, see Marius Canard, "Le Riz dans le proche orient aux premiers siècles de l'Islam," *Arabica*, 6 (1959): 113–131, and E. Ashtor, "Essai sur l'alimentation des diverses classes sociales dans l'orient médiévales," *Annales*, 23 (1968):1018f. On flax, see Adam Mez, *The Renaissance of Islam* (Patna, 1937), p. 459; Serjeant, *Islamic Textiles*, s.v. "Faiyum"; *WKAS*, 1:54b, ll. 33ff.

[33]*Qulqās, Arum colocasia* L. See de Sacy, pp. 22–26 et passim: "Suivant Ali ben-Redhwan, il n'y a point d'aliment qui se convertisse en bile plus promptement que la colocasie; d'autres médecins Égyptiens assurent que la colocasie est aphrodisique, et possède d'autres vertus, dont l'enumeration est etrangere a cet ouvrage" (p. 26). See also Bedevian, no. 496; Sontheimer, 2:312; Issa, p. 23, no. 3; Darby, p. 655f.; Ashtor, "Essai sur l'alimentation," p. 1024.

[34]See de Sacy, pp. 26–30 et passim.

[35]For a convenient survey of Egyptian agriculture, see R. C. Cooper, "Agriculture in Egypt, 640–1800," in *Handbuch der Orientalistik*, ed. B. Spuler, pt. 1, vol. 6 (*Geschichte der Islamischen Länder*), sec. 1 (Leiden, 1977), pp. 188–204. See also A. W. Watson, "The Arab Agricultural Revolution and Its Diffusion, 700–1100," *Journal of Economic History*, 34 (1974):8–35; idem, "A Medieval Green Revolution: New Crops and Farming Techniques in the Early Islamic World," *The Islamic Middle East, 700–1900*, ed. A. L. Udovitch (Princeton, 1981), pp. 29–58.

[36]The expression *bilād as-sūdān* properly means "land of the blacks." Although it may mean sub-Saharan Africa that was penetrated by Islam, it is used here to refer to the eastern Sūdān or the Egyptian Sūdān, confined to the basin of the Upper Nile. See *EI*¹, s.v. "Sūdān" (M. Delafosse), *Supplement*, s.v. "Sūdān" (S. Hillelson).

[37]Cf. Kühn, 19:300f.

it the filth, such as animal cadavers, [6b] its refuse, and the surpluses of thickets, plants, and stagnant waters. The river brings down all of this, mixed with a large quantity of clay and soil because of their weakness, along with the eggs laid by the fish that have matured in the swamps. At the beginning of the flood, its color is green because of the large quantity of stagnant and putrid water that contains duckweed[38] and water moss—whose color is very green on account of their corruption. Then, the water becomes turbid until it is finally like sludge. If it is purified, much clay collects in the bottom of a vessel together with a stinking, sticky, and foul-smelling moisture. This is the most convincing reason for the water's ruination and corruption.[39]

Hippocrates and Galen explained that the type of water that is quickly corrupted is that refined by the sun, such as the rainwater.[40] When the Nile water reaches Egypt, it is at the end of its refinement by the strong heat of the Sūdān. Its transformation is increased when the rotten substances of Egypt mix with it. Therefore, a great many kinds of fish are produced in it.[41] The excess of animals [7a] and plants, the corruption of this water, and the eggs of fish—all of them become substances in the creation of these fish, as Aristotle says in his *Book of Animals*.[42] It is also apparent that everything decays, and the animals are generated from the putrefaction. For this reason, many rats, worms, snakes, scorpions, hornets, and others are generated in Egypt.[43]

It is now evident that the dominant temperament in Egypt is the excessive heat and moisture; that the country consists of many distinct parts; and that its air and water are bad.

[38]*Armad, Lemna minor* L. See Issa, p. 106, no. 15; Lane, s.v. " 'armaḍun." Possibly it is a reference to the Zizyphus family—*Z. Lotus* Lam., see Bedevian, no. 3651; Sontheimer, 2:190; or *Z. Spina Christi* Willd., see Issa, p. 192, no. 8.

[39]See a comparable description of the Nile flood in de Sacy, pp. 329–359.

[40]Cf. Hippocrates, *Kitāb Buqrāṭ fī l-amrāḍ al-bilādiyya*, pp. 47–50, 67–78; idem, *Airs, Waters and Places*, 7; Pseudo-Aristotle, *Problems*, 1. 21; Levey, "Medical Ethics of Medieval Islam," p. 39: ". . . rainwater may be putrid and have a bad odor since it comes from many different kinds of moisture and is mixed with them. As a result, it is the first of waters to stink." On the general subject of water, see Sontheimer, 2:467–475.

[41]See Benjamin ben Jonah, *The Itinerary of Benjamin of Tudela*, ed. and trans. M. N. Adler (New York, 1964 repr.), p. 72.

[42]This is the title by which Aristotle's zoological corpus was most commonly known; see Remke Krut, *The Arabic Version of Aristotle's Parts of Animals: Book XI–XIV of the Kitāb al-Ḥayawān* (Amsterdam, 1979), pp. 15–19; Sezgin, *Geschichte des arabischen Schrifttums*, (Leiden, 1970), 3:349–352. See specifically, Aristotle, *Historia Animalium*, 7:10–17; 8:19.

[43]See Aristotle, *Meteorologica*, ed. Lee, p. 296/297. The notion of spontaneous generation based on the teaching of Aristotle was widespread in Islamic thought; see Ullmann, *Die Natur- und Geheimwissenschaften im Islam*, p. 54f.

· 2 ·

On the Description of the Various Kinds of Air in Egypt and What Is Generated in the Land of Egypt

It has been explained in the preceding that heat is dominant in the temperament of Egypt, accompanied by putridity. The Ancients believed that many superfluities dissolve into the air from places where there is much putrefaction; the superfluities do not allow the air to remain the same, depending on the extent that they ascend to the air. It has also been made clear that change is quick to occur to the air in Egypt because [7b] the sun's rays are not constant.[1] Because of these two factors, the diversity of the air changes in one day. At one time it is hot and another cold; at one time dry and at another humid; at one time agitated and at another still; and at one time the sun is shining and at another the clouds hide it.[2] On the whole, the air of Egypt varies greatly on account of what we have said. The air's diversity is not necessarily of one kind. It follows that the animal spirit[3] that is in us, by its connection with this air, is also not necessarily of one kind. Because of this, the bodily humors in the blood vessels and veins are not necessarily of one kind.

The reason for the scarcity of rainfall in Egypt is that the moist vapors, which are dissolved every day, are prevented from meeting in the atmosphere by the diversity of the air, the lowness of the mountains, and the heat of the earth. When the air becomes cold with the chill of night, this vapor descends to the surface of the earth, generating fog that creates dew and dampness. [8a] Sometimes this vapor dissolves

[1]That is, the sun's rays do not last in Egypt, as one would expect from the nature of the climate, because of the presence of the Muqaṭṭam Mountains.

[2]Cf. Prosper Alpin, *La Médecine des Egyptiens*, trans. R. de Fenoyl (Cairo, 1980), 1:19f.

[3]*Ar-rūḥ al-ḥayawānī*, see Part I of this volume.

invisibly. Because the vapor that gathers from the day before dissolves every day, rain clouds very rarely collect over the land of Egypt. It is clear that the air of Egypt is refreshed every day by the moist vapors that ascend to it and by what is dissolved.

Some of the people have said that the fog is formed by the change of the air to the nature of water. If this is added to what we said earlier, the speed of the air's alteration in Egypt and much of its putrefaction are more explicable. It has been explained that in Egypt there is considerable diversity in the air and that corruption rushes to the moist air. The ultimate cause of this is that during the driest time of the year in all other countries, humidity is more abundant in Egypt, for it is refreshed in the summer and autumn by the expansion of the Nile and its flooding, and this is different from other countries.[4]

Hippocrates taught us that the humidity of the summer and autumn is a surplus.[5] By surplus he means what goes beyond the natural course,[6] as rain occurring in the summer. [8b] Because of this, we say that the humidity of Egypt is a surplus. That is, the heat and the dryness are really the natural temperament of Egypt; however, the expansion of the Nile changes the dryness to surplus humidity. Thereby, putrid matters increase in this land. This is the first and greatest cause of Egypt's being the way it is—the poor quality of its soil, the large quantity of its putridity, and the ruination of its air and water.

These things, however, if they occur according to their normal course, do not cause a perceptible transformation in the bodies of Egyptians because they are accustomed to this situation, and their bodies are similar to it. All the plants and animals resemble the temperament of Egypt in the weakness and lack of endurance of their bodies, in the abundance of change, in the swiftness of illness, and in the brevity of life—as wheat in Egypt is doomed to early ruin and is quick to decay. We do not think that the bodies of the people and animals are different from the wheat in its rapid transformation. How could the matter be otherwise, [9a] for their bodies are built from these things. Consequently, the weakness, the abundant surplus, the putrefaction, and the frequent disease of plants and animals in Egypt are parallel to the poor quality of the land, its putridity, its surplus, and its rapid change

[4]Cf. de Sacy, p. 4f.

[5]*Hippocrates, Airs, Waters and Places*, 10.

[6]Cf. Ibn Bakhtīshū', *Risālah fī ṭ-ṭibb*, p. 30, l. 15; p. 49, l. 3; p. 51, l. 4; p. 51, l. 13; etc.

because the relationship is a direct one. Therefore, the life of the animals and plants is possible in it. Inasmuch as this is their relationship and they are close in their similarity, their life is possible. If foreign things come to Egypt, they are changed in their first encounter with this air; however, when they settle down and become accustomed to the air, they become healthy in a way that conforms to the land of Egypt.

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On the Six Causes Determining Health and Illness in Egypt

When God Almighty created all things, He made some dependent on others. He made many causes of health and sickness; some of them happen accidentally, such as earthquakes,[1] beatings, burning, drowning, and so forth. Doctors cannot do anything about these things. Others are inevitable, [9b] and man always has to deal with them. The Ancients considered them to be six in number:[2] (1) the air surrounding people's bodies; (2) food and drink; (3) movement and rest; (4) sleep and waking; (5) retention and evacuation; and (6) psychic events.[3]

We have previously summarized the matter concerning the air in Egypt. It was evident to the Ancients that the air does not cause illness if it adheres to what is customary. There are, however, bodies that deviate from their similarity to the air in some way, and they are susceptible to illness. Sickness afflicts such a body because of its deviation from this correspondence and from its natural predisposition.[4] The principle is the same with regard to the other causes. If they adhere to what is customary, they do not cause illness.[5] If the matter is as we have said, let us now turn to these other causes.

As for food and drink in Egypt, the crops are swift to change and weak in composition, and they spoil in a short time; examples are wheat, barley, lentils, chick-peas, broadbeans, [10a] and rambling

[1]Concerning earthquakes in Cairo, see Clerget, *Le Caire*, 1:56–59. The history of earthquakes in the Middle East is the subject of research by Mustapha A. Tāhir, including his article entitled "Traité de la Fortification des Demeures contre l'Horreur des Séismes . . .," *Annales Islamologiques*, 12 (1974):131–159.

[2]Cf. Ḥunayn, pp. 13, 25. For the six "non-naturals," see Part I of this volume.

[3]See Part I of this volume. Concerning "psychological accidents" (Ar. *al-a'rāḍ an-nafsānīyah*), see Bürgel, "Secular and Religious Features of Medieval Arabic Medicine," p. 51.

[4]Ibn Bakhtīshū', p. 88r: "Illness is a condition of the body in which the natural order is lost." See also ibid., pp. 75r, 89r.

[5]Ḥunayn, p. 11: "What is disease? Disease is a condition of the body that deviates from the normal course, and in which actions suffer from immoderation."

vetch.[6] The foods produced from them are not delicious compared with the same foods made in other countries. For example, the bread made from wheat produced in Egypt is not edible if it sits for a day and a night. After that, it is no longer enjoyable and does not hold together in one piece. It is not chewable and becomes moldy[7] in a short time; the same applies to flour. This is different from the breads of other countries.[8] It is the same with all the crops and fruits in Egypt and the products made from them. They are doomed to early spoilage on account of the swiftness of their transformation and alteration.[9]

Clearly, the temperament of imported goods changes according to the difference of the air. Their nature is changed to conform with conditions in Egypt, except that which has arrived very recently and retains its good quality. Thus, this is the state of the produce.

Concerning the animals that the people eat, the temperament of the native animals is similar to that of the people in their weakness [10b] and quickness to change. Consequently, meat is suitable to the people's natures. There are, however, imported animals, such as Cyrenaican rams.[10] Their transportation creates in their bodies aridity, dryness,

[6]For a useful survey of the diet in the classical Islamic period, see *EI*², s.v. "Ghidhā' " (M. Rodinson); see also de Sacy, pp. 311–328. For foods in Egypt especially, see M. A. Ruffer, *Food in Egypt, Mémoire presenté à l'Institut Égyptien*, 1 (1919):1–88, and W. J. Darby, P. Ghalioungui, and L. Grivetti, *Food: The Gift of Osiris*, 2 vols., (London, 1977). Ashtor ("Essai sur l'alimentation," p. 1027f.) concludes that oriental taste preferred three kinds of dishes: very sweet, salty, and meats seasoned or served with fruit; he describes the Egyptian diet, noting the widespread consumption of fish (p. 1033f.), which Ibn Riḍwān discourages.

[7]*Yatakarraju*, see *WKAS*, 1:120b, l. 23ff.; 557b, l. 32ff.

[8]The medieval Middle Eastern diet was distinguished by the predominance of wheat or "white" bread, contrary to European and Far Eastern diets. From antiquity Egypt was an exporter of wheat to other countries; the main wheat-growing region was Upper Egypt. See *EI*², s.v. "Khubz" (Ch. Pellat) and "Kamḥ" (E. Ashtor); Darby, pp. 55, 501–530; Ashtor, "Essai sur l'alimentation," pp. 1018–1021, 1034–1035, 1044. Ashtor states (p. 1020): "The Arab doctors recommended eating only white bread, and undoubtedly one cannot in this context minimize the influence of these prescriptions. The famous ar-Rāzī (d. A.D. 925) mentions bread made with flour that is not cleaned of bran (*nukbālah*) among the foods that provoke melancholy, and this is why he warns against the consumption of bread made from grits. Ibn Jazlah opposes unleavened bread as less nourishing than bread of the best flour. Similarly, Hibatallāh ibn Jumaʿ (d. A.D. 1198), private doctor to Saladin, recommended not eating any other than white bread. Maimonides, who lived at this time, gives precise instructions on this subject [see below]." Concerning the way of preparing bread so that it agrees with the eater's temperament, see Klein-Franke, "The Arabic Version of Galen's *περὶ ἐθῶν*," p. 132.

[9]See the remarks about the preparation of bread in Maimonides, p. 18.

[10]"The Berber tribes, the Lawāta, the Hawāra and the Awrigha, intermingled with Arab elements, took increasingly to stock-breeding, which spread at the expense of agriculture; exports to Egypt then consisted of live-stock, wool, honey and tar" (al-Bakrī quoted in *EI*², s.v. "Barḳa" [J. Despois]).

and humors that are not like the temperament of the Egyptians. For this reason, most of the rams get sick when they enter Egypt. After settling down in Egypt for a suitable length of time, their temperament changes and agrees with that of the Egyptians.

The majority of Egyptians drink from the Nile, which we have discussed sufficiently. But some people drink spring water, which is also close to their temperament, and fewer people drink stored water and rainwater. The favored drink among the people is *ash-Shamsī*[11] because the honey in it preserves its strength and does not allow it to change quickly.[12] The beverage is made when the weather is hot, so that the heat brings the drink to maturity. The raisins used in it are imported from a country with better air. Concerning Egyptian wine, it is rare that honey is not added when it is pressed.[13] Because wine is pressed from the native grapes, it resembles their temperament, and therefore the people prefer *ash-Shamsī* to it. With the exception of *ash-Shamsī* and Egyptian wine, [11a] the drinks are bad because of the swiftness of their transformation and the rottenness of their essence,

[11]*Ash-Shamsī*, a strong expensive wine fermented in the sunlight. See Muslim ibn al-Walīd al-Anṣārī, *Sharḥ dīwān Ṣarīʿ al-Ghawānī*, ed. Sāmī ad-Dahhān (Cairo, 1970), p. 197, l. 13, p. 203, ll. 6–7, and Abū l-ʿAtāhiyah, *Abū l-ʿAtāhiyah ḥayātuh wa siruh*, ed. Muḥammad M. ad-Dash (Cairo, 1968), p. 226, ll. 11–12; Mrs. Laylah Ibrāhīm kindly furnished us with these references. See also D. S. Rice, "Deacon or Drink: Some Paintings from Samarra Re-Examined," *Arabica* 5 (1958):22f., 26f.: *ash-Shamsī* or *al-mushammas* indicates naturally fermented wine, as opposed to *maṭbūkh* (see n. 15 below), which is artificially fermented wine.

[12]Despite its prohibition by Islam, Ibn Riḍwān advises the use of wine throughout this treatise, in accordance with the high nutritional value attributed to it by Galenic medicine. Similarly, see ar-Rāzī, *Guide*, pp. 88–91. Maimonides' remarks (Maimonides, pp. 19, 33, 40) on this subject are instructive: the doctor "has not commanded that this ought to be done, but mentions what his Art determines. The lawyers have already known, as the physicians have known, that wine can be of benefit to mankind. The physician, because he is a physician, must give information on the conduct of a beneficial regimen, be it unlawful or permissible, and the sick have the option to act or not to act. If the physician refrains from prescribing all that is of benefit, whether it is prohibited or permissible, he deceives, and does not deliver his true counsel. It is manifest that the Law commands whatever is of benefit and prohibits whatever is harmful in the next world, while the physician gives information about what benefits the body and warns against whatever harms it in this world. The difference between the edicts of the Law and the counsels of Medicine is that the Law commands compliance with what benefits in the next world and compels it, and forbids that which harms in the next world and punishes for it, while Medicine recommends what is beneficial and warns against what is harmful, and does not compel this or punish for that, but leaves the matter to the sick in the form of consultation; it is they who have the choice" (p. 19). On this passage, see F. Klein-Franke, "Der hippokratische und der maimonidische Arzt," *Freiburger Zeitschrift für Philosophie und Theologie*, 17 (1970):442–449.

[13]See *EI*², s.v. "Khamr" (A. J. Wensinck-J. Sadan); Darby, pp. 597–618; Ashtor, "Essai sur l'alimentation," pp. 1039–1043; J. Sadan, "Vin—Fait de Civilisation," in *Studies in Memory of Gaston Wiet*, ed. M. Rosen-Ayalon (Jerusalem, 1977), pp. 129–160.

such as date wine,[14] cooked wine,[15] and beer made from wheat.[16]

The food of the Egyptians is varied. The inhabitants of Upper Egypt are nourished mostly by the date palm trees[17] and sweetmeats made from sugar cane.[18] The people carry them to al-Fusṭāṭ and other places, where they are sold and eaten. The inhabitants of Lower Egypt are nourished by colocasia and rambling vetch; they carry them to al-Fusṭāṭ and other places, where the produce is sold and eaten. Many Egyptians frequently eat fish, fresh and salted.[19] They often eat sour milk and its products. Among the peasants, there is a type of bread called *ka'k*[20] that is made from crushed wheat; they dry it, so that it is their food during the entire year.

The bodies of the people are nourished by specific foods; they are familiar with these foods and are brought up on them. Yet, Egyptians generally eat bad foods.[21] These foods do not change the people's temperament as long as they follow the normal course. The bad quality of the food is also one of the things that assures the weakness of the people's bodies and the rapid occurrence of illness.[22] [11b]

The people in the countryside are more active than the people in the cities. Therefore, their bodies are healthier because of the exercise that hardens their limbs and makes their bodies strong. Concerning the people of Upper Egypt, their humors are more delicate and more

[14]*Nabīdh*, see Muḥammad M. Ahsan, *Social Life Under the Abbasids* (London, 1979), pp. 111–112.

[15]*Maṭbūkh*, also called *ṭilā'*. See ibid., p. 112; Dozy, s.v. "maṭbūkh;" Rice, "Deacon or Drink," pp. 21f., 26f.

[16]See Nāṣir-i Khusraw, pp. 130, 132, 152; Darby, pp. 56, 63, 533–551.

[17]See de Sacy, p. 32.

[18]See ibid., p. 312; Ashtor, "Essai sur l'alimentation," pp. 1023–1024, 1028; and below, chap. 10, n. 2.

[19]See Darby, pp. 337–404; Ashtor, "Essai sur l'alimentation," p. 1033f.

[20]Dozy, s.v. "ka'k"; *WKAS*, 1:234b, l. 25ff.; Maxime Rodinson, "Recherches sur les documents arabes relatifs à la cuisine," *Revue des Études Islamiques*, 17 (1950): 140, 152.

[21]Cf. *Hippocrates, Regimen in Acute Diseases*, 36.

[22]Cf. Hippocrates, *Kitāb Buqrāṭ fī l-amrāḍ al-bilādiyya*, p. 135/136. Ashtor asserts ("Essai sur l'alimentation," pp. 1035–1039) that the foods of the lower classes of Egyptian society until the end of the Middle Ages were low in calories, proteins, and lipids, but high in gludices. The situation was entirely different for skilled laborers, small merchants, and artisans; at least from the advent of the Fāṭimids, they were able to afford a varied diet with sufficient nutrition. The diet of the rich was marked by an abundance of sweets, wines, and meats, especially lamb. The contrast between the classes and their diets is vividly presented in a popular story that dates from the later Middle Ages. According to the tale, King Mutton declares war on King Honey—the poorman's sugar—who reigns over fish, vegetables, fruits, and milk products—the poorman's diet. See J. Finkel, trans., "King Mutton, a Curious Egyptian Tale from the Mamlūk Period," *Zeitschrift für Semitistik und verwandte Gebiete* 8 (1932):122–148; 9 (1933–34):1–18.

vaporous, dissolvable, and weak because of the intensity of the heat in their land, as compared with the people of Lower Egypt. Regarding the latter, most of the evacuation of their excesses is by excrement and urine because of the moderation of the heat in their land and their use of cold, coarse things, like colocasia.[23]

As for the character of the Egyptians, one man resembles another because the strength of character depends on the temperament of the body,[24] and their bodies are feeble, quick to change, and lacking in patience and endurance. Thus, inconsistency and changeableness dominate their natures, as do timidity and cowardice,[25] discouragement and doubt, impatience, lack of desire for knowledge and decisiveness, envy and calumny, lying and provocation of the ruler against one's own enemy, disparagement of the people, and in general, vile evils that spring from the baseness of the soul. These evils are not common to all Egyptians but are found in most of them. There are some whom God Almighty [12a] has blessed with excellence, a good character, and freedom from evil. Because the land of Egypt generates cowardice and base evils in the soul, lions do not live in this country; if lions are brought to Egypt, they become meek and do not multiply. The dogs in Egypt are less violent than those of other countries. Likewise, everything else in the country is weaker than its equal in other lands, except for what is naturally suited to this condition, such as the donkey[26] and the hare.[27]

[23]What Ibn Riḍwān intends is that the latter do not sweat so much, so that evacuation is brought about by excrement and urine. Regarding sweat, see Pseudo-Aristotle, *Problems* 2.

[24]See *Galens Traktat "Dass die Kräfte der Seele den Mischungen des Körpers folgen" in arabischer Übersetzung*, ed. and trans. Biesterfeldt, or *Oeuvres anatomiques, physiologiques et médicales de Galien*, trans. Daremberg, vol. 1, no. 3. See also Hans H. Biesterfeldt, "Notes on Abū Zayd al-Balḫī's medico-ethical treatise *Maṣāliḥ al-abdān wa-l-anfus*," in *La Signification du bas moyen age dans l'histoire et la culture du monde musulmane*, Actes du 8me congres de l'union europeenne des arabisants et islamisants, Aix-en-Provence, September, 1976 (1978), pp. 29–34.

[25]Cf. Pseudo-Aristotle, *Problems*, 14.

[26]Ath-Tha'ālibī, *The Laṭā'if al-ma'ārif*, p. 120: "The asses of Egypt, and also its horses, are characterized by their fine appearance and spirited temperament. But whereas certain other countries have horses of equally good breeding and pedigree, no other land, in comparison with Egypt, produces such fine asses. The Caliphs would never ride anything else inside their palace precincts and gardens except Egyptian asses. Al-Mutawakkil used to ascend the minaret of Sāmarrā on a Marīsī ass. . . . Marīs is a village in Egypt. . . ." See also de Sacy, p. 140; Ibn Ḥawqal, 1:161; Darby, p. 235f.

[27]See *EI² Supplement*, s.v. "Arnab" (F. Viré); Darby, p. 260f.