

# Commentary

This commentary has several aims: (1) to discuss terminology; (2) to explain editorial remarks; (3) to suggest an alternative reading or interpretation; (4) to verify the quotations to which Ms. Escorial refers; (5) to offer background into the medical framework; and (6) to suggest further reading when some central medical statements are only briefly mentioned in Ms. Escorial. Drugs, potions and other remedies can be found in the index of *materia medica* and *List of Prescriptions*. The commentary follows the logical order of the paragraphs in the edition of Ms. Escorial.

ⲟ:ⲓ ⲥ̅.....ⲥ̅: It is most likely that a phrase praising Allah has been erased from the manuscript. This may have occurred during the manuscript's adaptation to a Christian context when it was brought to Europe<sup>1</sup>—the manuscript is, after all, preserved in a Spanish monastery. Despite using UV technology while consulting the physical copy of Ms. Escorial, no trace of the original wording could be recovered.

ⲟ:ⲓⲓ **Phlebotomised veins:** The fifth chapter concerns the phlebotomised veins, not the blood in them, as Ms. Escorial reads: دم العروق المفصودة *dam al-urūq al-mafṣūda*, 'blood of the phlebotomised veins.' Thus, the word *dam* is omitted in this edition.

1:1 **Nutriments:** For Galen's account of how food becomes nutriment, see e.g., Galen, *On the Usefulness of the Parts of the Body*, translated into English by Margaret Tallmadge May (1996); and Galen, *On the Properties of Foodstuffs*, translated into English by Powell (2003).

1:2 **Blood is the most balanced of the humours:** Galen: "Of the humors, the most useful and most familiar is the blood."<sup>2</sup> See also Maimonides, *Aphorisms* 2: "Blood is something composed of all the humors according to a natural ratio. It is called 'blood' because of its dominance over the other humors. And this is what comes out through venesection and cupping. When we say that the body

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1 Penn, *Monks, Manuscripts, and Muslims: Syriac Textual Changes in Reaction to the Rise of Islam*, Hugoye: Journal of Syriac Studies, Vol. 12.2, 235–257, 2009 by Beth Mardutho: The Syriac Institute and Gorgias Press.

2 Galen, *Temp.*, II, 3, 603K (LCL 546: 158–149).

contains four humors—blood, phlegm, yellow bile, and black bile—by blood we do not mean something composed of all the humors, but something existing, in our conception, unmixed with the other humors.”<sup>3</sup>

**Humours:** Hippocrates explains the principle of the humours as follows: “The body of man has in itself blood, phlegm, yellow bile and black bile; these make up the nature of his body, and through these he feels pain or enjoys health.”<sup>4</sup> Different humours dominate in different seasons: “Phlegm increases in a man in winter; for phlegm, being the coldest constituent of the body, is closest akin to winter. [...] And in spring too phlegm still remains strong in the body, while the blood increases. For the cold relaxes, and the rains come on, while the blood accordingly increases through the showers and the hot days. For these conditions of the year are most akin to the nature of blood, spring being moist and warm. [...] And in summer blood is still strong, and bile rises in the body and extends until autumn. In autumn blood becomes small in quantity, as autumn is opposed to its nature, while bile prevails in the body during the summer season and during autumn.”<sup>5</sup>

**Innate heat:** Innate heat in Galen’s system: “There are two kinds of heat; the ordinary variety, which burns things up, and the *innate heat* of living creatures, which makes the body grow instead of consuming it, and also has the power of generation. The innate heat is often equated with nature in Galen’s works; it is the life of the body, which dies when it is extinguished. Since it is distributed to every part with the arterial blood, it is often also equated with blood. The innate heat, as its name suggests, is not acquired from outside; it comes to the embryo through the semen, which contains the hot principle, and resides in the arterial blood of the left ventricle when the heart is formed.”<sup>6</sup>

**As wood for the fire:** Corresponds to Galen: “Not only do the parts of the animal derive their nourishment from the blood, but the innate heat also owes its continuance to it, just as the fire on the hearth does to the burning of suitable logs, by which we see whole houses made warm.”<sup>7</sup>

3 Maimonides, *Aphorisms* 2, 1, p. 26.

4 Hippocrates, *Nat. Hom.*, IV (LCL 150: 10–11).

5 Hippocrates, *Nat. Hom.* VII (LCL 150: 18–21).

6 Brain, *Galen on Bloodletting*, p. 8.

7 Galen, *Cur. Rat. Ven. Sect.*, p. 72.

**As Galen said:** This is clearly a quotation from Galen, although I have not been able to identify the source.

**Motion:** Galen explains this term as follows: “When, therefore, such and such a body undergoes no change from its existing state, we say that it is *at rest*; but, if it departs from this in any respect we then say in this respect it *undergoes motion*. Accordingly, when it departs in various ways from its pre-existing state, it will be said to undergo various kinds of motion.”<sup>8</sup> This can happen with respect to colour, flavour, quality, transference, growth and decay, genesis and destruction.<sup>9</sup>

1:3 **Erasistratus:** Ms. Escorial reads أرسطاطليس *Aristāṭalīs*, but it is most certainly not Aristotle who is meant, but Erasistratus, who was notorious for rejecting bloodletting and preferring fasting. See e.g., *Galen’s Book on Venesection against Erasistratus*, and *On Venesection against the Erasistrateans at Rome in Brain, Galen on Bloodletting*.<sup>10</sup> For this reason, the suggested emendation is أراسسراطس *Arasistrāṭus*, also supported by Qusṭā ibn Lūqā:

إن جالينوس ذكر العلاج بالفصد في كتابه المسمى “حيلة البرء” وفي كتابه “في تدبير الأصحاء” وفي مقالة مفردة ناقض فيها أراسسراطس وبين فيها بيانا واضحا أنه كان مخطئا في تركه العلاج بالفصد.<sup>11</sup>

1:4 **Hippocrates ... three kinds of nutriment:** “Nutriment is what nourishes, what can nourish, and what will nourish.”<sup>12</sup> Galen’s views on this topic, based on Hippocrates’ statement above and introducing the terms ‘quasi-nutriment’ and ‘destined nutriment’ used in this edition, are discussed in detail in Galen, *Nat. Fac.*, I. XI: “For to that which is already being assimilated he gave the name of *nutriment*; to the similar material which is being presented or becoming adherent, the name of *quasi-nutriment*; and to everything else—that is, contained in the stomach and veins—the name of *destined nutriment*.”<sup>13</sup>

8 Galen, *Nat. Fac.*, I, II (LCL 71: 4–5).

9 Galen, *Nat. Fac.*, I, II (LCL 71: 4–7).

10 Both works, *Galen de Venae Sectione adversus Erasistratum Liber* (pp. 15–37), and *Galen de Venae Sectione Adversus Erasistrateos Romae Degentes* (pp. 38–66) extant in Brain 1986, *Galen on Bloodletting*.

11 Qusṭā ibn Lūqā, *Kitāb ft l-Faṣd*, p. 290.

12 Hippocrates, *Nutriment*, 8 (LCL 147: 328–329). For an Arabic translation of the same work, see Hippocrates, *De alimento*.

13 Galen, *Nat. Fac.*, I. XI (LCL 71: 42–43).

**That which is constantly dissolved from them:** Ms. Escorial reads “وهو العوض مما يتحلل دايبا”, corrected to “وهو العوض مما يتحلل دائما”, supported by Ms. Parma: “והוא יהיה במקום מה שנתך תמיד מהם” “and replaces what is constantly dissolved from them”.

1:5 **Inflation:** According to Galen, inflation (*intifāḥ*) is a swelling that arises from thin phlegm. The term is a translation of the Greek ἐμφύσημα, which means inflations of the cellular tissue, or stomach, as well as swellings of the eye and knee. The term *intifāḥ* is also used as a common name for swellings.<sup>14</sup>

1:7 **He said:** Galen is most likely intended, as this passage and those that follow continue with Galenic material: “And if one considers along with this the adjacent viscera, like a lot of burning hearths around a great cauldron—to the right the liver, to the left the spleen, the heart above, and along with it the diaphragm (suspended and in a state of constant movement), and the omentum sheltering them all—you may believe what an extraordinary alteration it is which occurs in the good taken into the stomach. How could it easily become blood if it were not previously prepared by means of a change of this kind?”<sup>15</sup>

**Large omentum:** Galen on omentum: “Why is this part [the omentum] so very extensive in man, covering all the intestines? Is it that in man the concoctions are very feeble and the skin very soft, devoid of hair, and very easily injured? In other animals, to be sure, the omentum does not cover the stomach alone, but spreads over the intestines to a greater or lesser extent in accordance with the nature of each animal.”<sup>16</sup>

1:8 **Whenever the stomach feels the need for nutriment:** understood as it is the attraction (*imtiṣāṣ*) that brings the food to the stomach, and then the stomach clings to the food and thus receives nutriment. Galen says: “And this cannot possibly take place in any other way than by the stomach drawing the food to itself.”<sup>17</sup>

14 Ibn Ḡanāḥ II, pp. 786–787.

15 Galen, *Nat. Fac.*, III.VII, 163–164 (LCL 71: 254–255).

16 Galen, *UP*, Fourth Book, 210, p. 215.

17 Galen, *Nat. Fac.*, III, VIII (LCL 71: 270–271).

1:9 *Porta*: Galen discusses this topic in *UP*, IV, 1, pp. 204 ff.

**Had it not been for the watery fluid that mixes with the blood:** Galen: “For the chyle resulting from the food could not be taken up successfully from the stomach into the veins and could not pass easily through the many fine veins in the liver unless some thinner, watery fluid were mixed with it as a vehicle. In fact, this is the reason why water is useful to the animal; for although no part can be nourished by water, nutriment could not be distributed from the stomach if it were not conducted in this way by moisture of some sort.”<sup>18</sup>

**Straight veins:** What is meant with this is unknown. It may be that Ms. Escorial should read *al-ʿurūq al-ʿaẓīma*, ‘great veins’—‘great vessels’ are mentioned in Galen, *UP*;<sup>19</sup> ‘great artery’ features in Galen, *Meth. Med.* III.<sup>20</sup>

1:10 **A large vein:** i.e., *vena cava*. Galen: “Another vessel, a vein, which is called hollow because of its size [the vena cava], passes from the convexity of the liver upward and downward and resembles a sort of double trunk; for some parts of our body are higher than the liver and some are lower.”<sup>21</sup>

**Convexity of the liver ...:** Hippocrates: “Root of veins, liver; root of arteries, heart.”<sup>22</sup> Corresponds to al-Rāzī’s *al-Kitāb al-Manṣūrī*: “All the veins arise from the convexity of the liver, the liver being concave on the interior side, convex on the exterior side. A large vein grows from its convex side.”<sup>23</sup> For a complete chapter on veins, see De Koning, *Trois Traités d’Anatomie Arabes* (pp. 36–43).

**By the instruments assigned for it:** probably the kidneys. Galen: “When these thin fluids have finished their work, they should no longer be retained in the body because they would become an alien burden to the veins. This is the purpose for which the kidneys have been formed, hollow instruments that attract this thin, watery residue through one set of canals and expel it through another.”<sup>24</sup>

18 Galen, *UP*, Fourth Book, 1, p. 207.

19 Galen, *UP*, Sixteenth Book, II, p. 713.

20 Galen, *Meth. Med.* III, XI, 800K (LCL 518: 208–209).

21 Galen, *UP*, II, 378, p. 682.

22 Hippocrates, *Nutriment*, xxxi (LCL 147: 352–353).

23 De Koning, *Trois Traités d’Anatomie Arabes*, p. 36 (my translation).

24 Galen, *UP*, Fourth Book, p. 207.

**They take from each other, because they are connected:** The closest parallel I have found in Hippocrates' *Nutriments* is: "There is one flowing together, one breathing together: all things are in accord. All things belong to one system, but part by part the parts of each part fulfill their functions."<sup>25</sup> See also Hippocrates, *Places in Man*: "All vessels communicate and flow into one another."<sup>26</sup> See also Galen, *UP*: "All over the body the arteries and veins communicate with one another by common openings and exchange blood and pneuma through certain invisible and extremely narrow passages."<sup>27</sup>

**2:1 The circumstances that must be considered:** This corresponds to what Galen and also Qusṭā ibn Lūqā have written on the topic.<sup>28</sup> In his *Kitāb al-Iklīl*, al-Rāzī states that unlike phlebotomy, cupping may be used during all seasons, for whomever and wherever.<sup>29</sup>

**2:2 Disposition:** *Diathesis*, in Greek διάθεσις, a term that Galen uses for any stable condition of body, whether it be normal or abnormal,<sup>30</sup> to which Montanari gives "disposal, disposition, state, condition, way of being (*of body and spirit*)."<sup>31</sup> It is close to *crasis*, in Greek κράσις, i.e., "the mixture of humours, or of qualities, in the constitution of an individual; temperament";<sup>32</sup> for which Montanari gives "temperament, constitution, nature".<sup>33</sup> In Galen, *Meth. Med. Hankinson*, Galen writes "the conditions of the parts, which some call 'dispositions'".<sup>34</sup>

**Unbalanced:** The word in Ms. Escorial is corrupt, but Ms. Parma reads מתחלפות, 'divergent.'

**2:3 Nutriment at the time of the paroxysm intensifies the fever:** Galen: "When movement to the depths prevails without inflammation of a viscus or a surplus of humors, you will do no harm if you nourish a little more quickly during the

25 Hippocrates, *Nutriments*, 23 (LCL 147: 332–333).

26 Hippocrates, *Places in Man*, 3 (LCL 482: 26–27).

27 Galen, *UP*, Sixth Book, p. 303.

28 Galen, *Cur. Rat. Ven. Sect.*, p. 67; Qusṭā ibn Lūqā, *Kitāb fi l-Faṣḍ*, pp. 330–331.

29 Al-Rāzī, *Kitāb al-Iklīl*, p. 145 (f. 31<sup>a</sup>).

30 Brain, *Galen on Bloodletting*, p. 178.

31 Montanari, *The Brill Dictionary of Ancient Greek*, p. 486.

32 Brain, *Galen on Bloodletting*, p. 177.

33 Montanari, *The Brill Dictionary of Ancient Greek*, p. 1171.

34 Galen, *Meth. Med. Hankinson*, p. 30.

paroxysms whereas, if there is either some inflammation or abundance, you must guard against nourishment prior to the paroxysm as this is a very harmful thing [to do].”<sup>35</sup>

**Hippocrates ...: “Abstain from food at the time of the paroxysm”:** Hippocrates: “And if through lack of forethought there is an attack of fever, nothing should be given for three days except water. If the fever go down in that time, well and good; if it does not, treat the patient with barley water, and on the fourth or the seventh day he will sweat and be quit of the trouble.”<sup>36</sup>

2:4 **Physician:** The Arabic word *متطبب mutaṭabbib* is translated as ‘physician,’ yet a terminological distinction could be drawn between *طبيب ṭabīb*, ‘philosopher-physician,’ and *متطبب mutaṭabbib*, ‘practitioner.’<sup>37</sup>

**Fourteen days:** Hippocrates: “Acute diseases come to a crisis in fourteen days.”<sup>38</sup> This period also marks a critical limit for prognosis: regarding jaundice, Hippocrates states that the “patient generally dies within fourteen days; if he survives that many, he recovers.”<sup>39</sup> For a thorough explanation of how this can be concluded, and how the regimen should be applied, see Galen, *Opt. Med. Ex.*, p. 67 (4, 6–10).

[In the case of] a very acute illness, one has to apply a very restricted regimen: This concept is confirmed both by Hippocrates and Galen. Hippocrates: “Where the disease is very acute, immediately, not only is the pain extreme, but also it is essential to employ a regimen of extreme strictness.”<sup>40</sup> Galen referring to Hippocrates: “When the disease is at its height a very restricted regimen must be used.”<sup>41</sup>

**A very restricted regimen:** Ms. Escorial reads: المرض البالغ في اللطافة جدا ينبغي أن يدبر بالتدبير البالغ في اللطافة جدا *al-maraḍ al-bāliġ fī l-laṭāfa ġiddan yanbaġī an yudabbar bi-l-tadbīr al-bāliġ fī l-laṭāfa ġiddan*. It is likely that the copyist of Ms. Escorial has copied the words *al-bāliġ fī l-laṭāfa ġiddan* twice by mistake,

35 Galen, *Meth. Med. III, XI*, 21. 809K (LCL 518: 220–223).

36 Hippocrates, *Regimen III, LXXII* (LCL 150, pp. 390–393).

37 Temkin, *Galenism*, p. 72.

38 Hippocrates, *Aphorisms, XXIII* (LCL 150: 112–113).

39 Hippocrates, *Critical Days*, 9 (LCL 509: 308–309).

40 Hippocrates, *Aphorisms, LVII* (LCL 150: 102–103).

41 Galen, *Opt. Med. Ex.*, p. 81.

and one wants to refer to an acute, *ḥādd*, illness. The concept should, as seen above, be that a very restricted regimen has to be applied in a very acute illness. ‘Very restricted regimen’ is attested in Arabic as *التدبير ما هو في الغاية من اللطافة* *al-tadbīr mā huwa fī l-ġāya min al-laṭāfa*,<sup>42</sup> whereas *تدبير لطيف* *tadbīr laṭīf* is simply ‘a light diet.’<sup>43</sup>

**Regimen:** Cf. Powell in Galen, *Alim. Fac.*: “The way to this state of excellence, many believed, was through *diaita*, which we usually translate as regimen, and which meant much more than the word diet that is derived from it, embracing as it did virtually everything to do with the lifestyle of the individual. According to Celsus it was one of three forms of therapy available to the physician (although therapy was only a part of its purpose)—the others being surgery and pharmacology. The concerns of regimen were with the whole of an individual’s activities, covering such things as how often and when one should bathe; the nature of one’s work and leisure; sexual activity; and, of course, the food one ate and its preparation. This was a holistic approach to personal health two millennia before the word was coined and the concept popularized in the twentieth century.”<sup>44</sup>

2:5 **Barley broth:** also translated as gruel. It was considered a suitable dish for many ailments. Hippocrates: “Now I think that gruel made from barley has rightly been preferred over other cereal foods in acute diseases, and I commend those who preferred it; for the gluten of it is smooth, consistent, soothing, lubricant, moderately soft, thirst-quenching, easy of evacuation should this property too be valuable, and it neither has astringency nor causes disturbance in the bowels or swells up in them. During the boiling, in fact, it has expanded to the utmost of its capacity.”<sup>45</sup>

**Bread pith:** Ms. Escorial reads *لباب* *lubāb*, most likely referring to *لباب الخبز* *lubāb al-ḥubz*, bread pith.<sup>46</sup> Ms. Parma reads *לבִּיבֹת הַפֶּת*, *levivot ha-pat*.

2:6 **As to the age, boys ...:** Corresponds to Galen: “Those who have large veins, who are moderately slender and neither fair nor soft-fleshed, you will evacuate

42 Translated from Galen by Ḥunayn ibn Ishāq in Galen, *Opt. Med. Ex.*, pp. 80–81.

43 Translated from Galen by Ḥunayn ibn Ishāq in Galen, *Opt. Med. Ex.*, pp. 66–67.

44 Galen, *Alim. Fac.*, pp. 4–5.

45 Hippocrates, *Regimen in Acute Diseases*, x (LCL 148: 70–71).

46 Nasrallah, *Annals of the Caliphs’ Kitchens*, p. 570.

freely. Those of the opposite type, however, must be sparingly evacuated, since they have little blood and flesh that transpires well. For the same reason you will not phlebotomise children up to the age of fourteen.”<sup>47</sup>

**Old men, i.e., from the beginning of sixty years:** Corresponds to Galen: “Some sixty-year-olds can no longer bear phlebotomy, while some people of seventy still can. But obviously you will remove less from these, even if they appear to be in the same condition as a body in the prime of life.”<sup>48</sup>

**Galen mentioned that he phlebotomised old men in the age of seventy years:** Galen: “You have learned to trust the strong, regular pulse as an infallible sign of strength of the faculties; this applies even more strongly to the large pulse. Thus you will phlebotomise even the seventy-year-olds, if the kind of pulse I have mentioned is present, whenever their condition demands it.”<sup>49</sup>

2:7 **Al-Fuṣṭāt:** Ms. Escorial reads *Madīnat Miṣr*, referring to al-Fuṣṭāt, that was the capital of Egypt.<sup>50</sup> However, this location is commonly not connected to al-Rāzī. As discussed in the introduction, Ibn al-Nadīm does mention al-Rāzī visiting various countries,<sup>51</sup> offering a general indication of wider travels that aligns with a claim by al-Khalidi, who in his book *Al-Kīmiyā’ ‘ind al-‘Arab* specifically mentions Iraq, Syria, Egypt, and al-Andalus as regions that al-Rāzī visited in search of knowledge: “*irtaḥala fī ṭalab l-‘ilm ilā l-‘Irāq, wa-l-Šām, wa-Miṣr wa-l-Andalus*”.<sup>52</sup> However, the lack of additional support and immediate sourcing for al-Khalidi’s claim necessitates a cautious approach to this information. Another indication of the author’s familiarity with Egypt is evident in §11:5, where he briefly notes some Egyptian customs and habits, and their distinct terminology in comparison to Iraq.

**Verjuice:** “An acidic juice obtained by pressing unripe grapes, or a juice of other unripe fruits”.<sup>53</sup>

47 Galen, *Cur. Rat. Ven. Sect.*, p. 87.

48 Brain, *Galen on Bloodletting*, p. 131.

49 Galen *Cur. Rat. Ven. Sect.*, p. 87.

50 Minorsky, *Ḥudūd al-‘ālam*, p. 151.

51 Ibn al-Nadīm, *Fihrist*, p. 701.

52 Al-Khalidi, *Al-Kīmiyā’ ‘ind al-‘Arab*, p. 21. However, al-Khalidi does not provide sources for this statement.

53 Liddell & Scott, *A Greek-English Lexicon*, p. 1229a.

**Syrup:** According to Temkin, syrups were “an Arabic contribution to pharmacology.”<sup>54</sup>

**Syrup of both [types of] pomegranates:** What is meant by this is both sweet (*ḥulw*) and sour (*ḥāmiḍ*) pomegranates.<sup>55</sup>

***Sikbāğ, ḥiṣrimiyya, rummāniyya, summāqiyya, ‘adasiyya:*** For more on these dishes, see commentary for § 11:5.

2:8 **There is no fixed limit:** Corresponds to Galen: “we cannot lay down in black and white a fixed amount to be removed in each of the conditions mentioned.”<sup>56</sup> Furthermore, Qusṭā ibn Lūqā mentions that there is no specific amount of blood one shall extract, but instead, one has to take into account all the distinguishing features of each case, i.e., body type, nature of the illness, mixture of the country, the present time, the age of the patient and their strength.<sup>57</sup> The weights and measures mentioned in Ms. Escorial depend on time and place, introducing a degree of uncertainty regarding their equivalence. For a brief overview of weights and measures, see *index of weights and measures*.

**Galen mentioned ...:** Galen: “I have known myself remove as much as six pounds of blood from some patients, extinguishing the fever forthwith and doing the faculties no harm; yet in others one and a half could not be taken without some slight injury to the faculties, and if two had been taken from these patients, the gravest damage would have resulted.”<sup>58</sup>

**In his treatise, *On Strength and Weakness*, Qusṭās reported ...:** Ms. Escorial refers to Qusṭā ibn Lūqā, who indeed wrote the aforementioned treatise which was preserved in the Aleppo Ḥakīm collection and could not be consulted.<sup>59</sup> That ‘Abdullāh al-Rāzī phlebotomised a patient is supported by Ms. Parma: *הוא הקיז חולה כי הוא אלרזי בשם עבד אללה אלראזי* “and Qusṭās reported that ‘Abdallāh al-Rāzī phlebotomised a patient”. The marginal note reads: *إنسانا*.

54 Temkin, *Galenism*, p. 127.

55 Ibn al-Ğazzār, *Zād al-Musāfir*, 1.10.4 no: 174 (p. 107).

56 Galen, *Cur. Rat. Ven. Sect.*, p. 89.

57 Qusṭā ibn Lūqā, *Kitāb fī l-Faṣḍ*, p. 364.

58 Galen, *Cur. Rat. Ven. Sect.*, p. 89.

59 Sezgin, *Geschichte des arabischen Schrifttums*, Bd. 3, p. 273.

”أظنه هذا وأما الأمر المنتسخ منها هذه فليس فيها شيء  
as for the thing that is copied from this [مقالة, treatise], there is nothing in  
it.”

2:9 **Hard-working:** Ms. Escorial reads من كان مباطشا *man kāna mubāṭišan*. The root conveys senses of ‘seizing violently,’ ‘assaulting,’ ‘labouring,’ ‘struggling,’<sup>60</sup> understood as an overworked, hard-working person. Ms. Parma reads: מי שיהיה רופא *mi še-yihye rofe*, ‘who is a physician.’

**Rational thinking in sciences that require concentration:** Ms. Escorial reads *al-‘ulūm al-daḡīqa*, ‘exact sciences,’ understood as ‘exacting sciences,’ i.e., sciences that require concentration.<sup>61</sup> On the other hand, in their book *Islamicate Occult Sciences in Theory and Practice*, Liana Saif and Francesca Leoni mention that the term *al-‘ulūm al-daḡīqa*, i.e., ‘the intricate sciences,’ is synonymous with the occult sciences.<sup>62</sup> This sort of an interest comes with a risk: “No-one who devotes too much effort to thinking about a certain science (*fikr fī ‘ilm mā*) can avoid ending up with melancholy.”<sup>63</sup>

2:10 **Those who have not yet undergone this procedure:** Galen: “someone who is not used to bleeding [should not proceed to perform venesection].”<sup>64</sup>

2:11 **The most tolerant bodies for phlebotomy are ...:** Galen: “Those who have large veins, who are moderately slender and neither fair nor soft-fleshed, you will evacuate freely. Those of the opposite type, however, must be sparingly evacuated, since they have little blood and flesh that transpires well.”<sup>65</sup>

**We may also see bodies that are fat ...:** Galen in Maimonides, *Aphorisms 24*: “There are bodies that are extremely emaciated and [yet] have much blood, and there are other bodies that are obese and fat and [yet] have little blood.”<sup>66</sup>

60 Lane, *An Arabic-English Lexicon*, book 1 part 1, p. 218.

61 For clarifying what is meant by this term, I want to thank Professor Tzvi Langermann.

62 Saif, *Islamicate Occult Sciences in Theory and Practice*, p. 2.

63 Swain, *Social Stress and Political Pressure: On Melancholy in Context*, pp. 121–122.

64 Quote from Galen’s *Method of Medicine to Glaucon* in Maimonides, *Aphorisms 12*, 5, p. 29. In *Method of Medicine to Glaucon*, Galen seems to be talking about purging in this statement. See Galen, *Meth. Med. G*, 15, 45K (LCL 523: 404–407).

65 Galen, *Cur. Rat. Ven. Sect.*, p. 87.

66 Maimonides, *Aphorisms 24*, 17, p. 79.

**2:12 A woman who suffered from amenorrhea for eight months:** I have not been able to consult this specific book in Galen's commentary on Hippocrates' *Epidemics*, but the case is documented in other sources. "Galen reports [the case] of a woman whose menstruation was retained for eight months and who was extremely emaciated. When he saw that the blood was flowing copiously in her vessels but that it had a livid color, he bled her and extracted on the first day a quantity of one and a half *ratl* of dark blood resembling liquid tar. On the second day he extracted one *ratl* and on the third day eight ounces. And he said that she was cured and her body returned to its [normal] condition in a short time."<sup>67</sup>

**2:13 Muḥammad ibn 'Abd al-Malik al-Zayyāt:** Ms. Escorial reads Aḥmad 'Abd al-Malik al-Zayyāt, probably referring to Muḥammad ibn 'Abd al-Malik al-Zayyāt (d. 243/847), who was a vizier in the Abbasid period under the caliphs al-Mu'taṣim and al-Wāṭiq, and an important sponsor of the translation of the works of Galen.<sup>68</sup>

**2:14: Experience:** It was highly important that the physician was educated and has experience, as already Hippocrates mentioned: "Life is short, the Art long, opportunity fleeting, experiment treacherous, judgment difficult. The physician must be ready, not only to do his duty himself, but also to secure the co-operation of the patient, of the attendants and of externals."<sup>69</sup> In *Epidemics* I, he says: "The art has three factors, the disease, the patient, the physician. The physician is the servant of the art. The patient must cooperate with the physician in combating the disease."<sup>70</sup>

**Scammony:** The Arabic word in Ms. Escorial, *المحمودة*, *al-maḥmūda*, is a synonym for *السقمونيا*, *al-saqmūniyā*, i.e., *convolvulus scammonia*. The resin of the dried, milky sap extracted from its living roots has a strong laxative effect.<sup>71</sup>

**2:16 Spring is the most optimal season for phlebotomy:** Galen: "The first point is that the health of the primary body parts consists on the balance of the mixture of hot, cold, dry and wet. The second is that spring is the most balanced

67 This story features in book 6 of Galen's commentary of Hippocrates' *Epidemics*, see Maimonides, *Aphorisms* 24, 17, p. 79.

68 Ibn Abī Uṣaybi'a, *Literary History of Medicine*, 9.49, p. 554, footnote 62.

69 Hippocrates, *Aphorisms* I, 1 (LCL 150: 98–99).

70 Hippocrates, *Epidemics* I, 11 (LCL 147: 170–171).

71 Dietrich, *Dioscurides Triumphans*, IV 160, pp. 674–675.

season in (terms of) mixture when it maintains its characteristic mixture, and blood therefore increases during it."<sup>72</sup>

**Galen mentioned ... Rome:** I have not managed to locate this quotation.

2:17 **Countries:** Content identical to information given in several long passages in Hippocrates' *Airs, Waters, Places* (LCL 147), chapters III, IV, and V. See also Galen, *Meth. Med. G.*, Book I, chapter 15 (LCL 523: 402 ff.).

**The Big Dipper:** The asterism of Big Dipper consists of seven bright stars that belong to the larger constellation of Ursa Major, i.e., Dubhe ( $\alpha$ ), Merak ( $\beta$ ), Pherkad ( $\gamma$ ), Megrez ( $\delta$ ), Alioth ( $\epsilon$ ), Mizar ( $\zeta$ ), and Benetnash ( $\eta$ ).<sup>73</sup>

**Ursa Minor:** The constellation of Ursa Minor consists of three bright stars,  $\alpha$ ,  $\beta$  and  $\gamma$ , of which the Arabic term *farqadān*, acc. and gen. *farqadayn*, refers to the stars named Kochab ( $\beta$ ) and Pherkad ( $\gamma$ ).<sup>74</sup>

**Canopus:** Canopus ( $\alpha$ ) is the brightest star in the constellation of Carina, and the second brightest of all stars in the night sky.<sup>75</sup>

2:18 **Blood increases by eating young meat and confections, and by drinking wines:** Foodstuffs discussed in detail in Galen: *On the Properties of Foodstuffs*, edited and translated by Powell (2003). According to Galen, the flesh of animals from the pig family is the best meat,<sup>76</sup> but it is understandable that al-Rāzī due to Islamic influences does not hold this view. Young meat in general, according to Galen, is superior to the meat of older animals.<sup>77</sup> Of wines, thick, red wines are the most beneficial for producing blood.<sup>78</sup>

**Wine:** Wine, in Arabic نبيذ *nabīḍ*, is defined as either grape or date wine in al-Kindī, *Aqrābādīn*.<sup>79</sup>

72 Galen, *Com. Hip. Ep.*, I, p. 77.

73 Bakich, *The Cambridge Guide to the Constellations*, p. 300.

74 Bakich, *The Cambridge Guide to the Constellations*, p. 302.

75 Bakich, *The Cambridge Guide to the Constellations*, p. 168.

76 Galen, *De Alim. Fac.*, III:1.

77 Galen, *De Alim. Fac.*, III:18.

78 Galen, *De Alim. Fac.*, III:39.

79 Al-Kindī, *Aqrābādīn*, p. 339. For more on wines, see Galen, *Alim. Fac.*, III:39 (pp. 149–150); Galen, *Meth. Med. II, XII*, chapter 4; Dioscorides, *GHD*, Book V; and Hippocrates, *Regimen III* (LCL 150: 324–327).

2:19 **Hippocrates declared this ...**: I have not managed to locate this quotation.

**The humours in the body are [not] balanced**: Since the principle of phlebotomy is to restore the balance in the body when the humours are out of balance, most likely a negation was missing.

**As Galen said in his book *On Simple Drugs***: I have not been able to locate this quotation.

3:2 **The causes that make phlebotomy necessary**: Galen in *Cur. Rat. Ven. Sec.*: “Those who intend to use phlebotomy must consider first of all how many states of the body there are that call for evacuation. The next question is, which of these states require evacuation by phlebotomy; for there are many conditions, some of which need some other sort of evacuation, and certainly not bloodletting.”<sup>80</sup>

3:3 **Overfilling**: In *Galen on Bloodletting*, Brain translates this as *plethos*, or *plethora*, from the Greek πλῆθος, that stands for excessive quantity or surplus.<sup>81</sup> Galen: “Whenever the humors are increased to an equal degree to each other, [doctors] call this ‘abundance’ or ‘plethora’. On the other hand, whenever the body is already full of yellow or black bile, or phlegm, or the serous humors, they call such a condition *kakochymia* and not plethora. Plethora is treated by the letting of blood, and by numerous baths, exercises and rubbings, as well as by discutient medications, and in addition by all fastings, which I covered comprehensively in the treatises on health. *Kakochymia*, however, is treated by the specific evacuation appropriate for each of the humors in excess.”<sup>82</sup> Every excess is harmful, as stated by Hippocrates: “all excess is hostile to nature.”<sup>83</sup>

**Overfilling, which is divided into two parts**: i.e., overfilling relating to vessels, and overfilling affecting the strength. In *Galen on Bloodletting*, Brain translates these as *plethos by filling* and *dynamic plethos*: “It has been shown in my book on plethos that plethos is of two kinds, both in origin and in terminology. One set of signs indicates dynamic plethos, another the variety due to dilatation of the vessels containing the humours, which some call plethos by filling.”<sup>84</sup>

80 Galen, *Cur. Rat. Ven. Sect.*, p. 67.

81 Montanari, *The Brill Dictionary of Ancient Greek*, p. 1681.

82 Galen, *Meth. Med. III, XIII*, 891K (LCL 518: 344–345).

83 Hippocrates, *Aphorisms* II, LI (LCL 150: 120–121).

84 Galen, *Cur. Rat. Ven. Sect.*, p. 71.

**Overfilling relating to vessels:** Galen: “The other sort, which is known as plethos by filling, also frequently rushes down into parts, leading to swellings, but it is a cause of apoplexies and rupture of veins as well; it is therefore essential to try to evacuate plethos quickly, before it has a chance to do the patient some grave harm.”<sup>85</sup>

**Pneuma:** Galen identifies three types of pneuma: vital pneuma that is generated in the heart and the arteries, that is produced from the inhalation and vaporisation of the humours; psychic pneuma, that is generated from a further refinement of the vital pneuma in the retiform web through the carotid arteries, reaching the ventricles of the brain;<sup>86</sup> and natural pneuma, generated in the liver and distributed through the veins.<sup>87</sup>

**The body is healthy:** Galen: “when the faculties are oppressed by plethos, it may be that the person has not yet become ill.”<sup>88</sup>

**Magnitude of pulse:** In general, pulse is a strong prognostic sign. For more about pulse in prognostics, see, e.g., Maimonides, *Aphorisms 4*, “Containing aphorisms concerning the pulse and the prognostic signs to be derived from it”.<sup>89</sup>

**Urine:** Urine in general is a bodily fluid from which prognostic signs can be derived. See, e.g., Hippocrates, *Prognostics*, Iyōb Urhāyā’s *Kitāb fī l-Bawl* in al-Rāzī’s *The Comprehensive Book*,<sup>90</sup> and Maimonides, *Aphorisms 5* “Containing aphorisms concerning the [prognostic] signs to be derived from the urine”.<sup>91</sup>

**Indication:** Galen attests that the term ‘indication’ is “the discovery of the truth about the thing in question arising out of the nature of the thing and made through following out the clues given by what is clearly observable”.<sup>92</sup> Kieffer

85 Galen, *Cur. Rat. Ven. Sect.*, p. 74.

86 Galen, *PHP VII 3*, pp. 444–445. For an explanation how this works, see Galen, *PHP VII 3–4*, pp. 442–453.

87 Galen, *UP*, p. 48.

88 Galen, *Cur. Rat. Ven. Sect.*, p. 71.

89 Maimonides, *Aphorisms 4*.

90 Kahl, *The Sanskrit, Syriac and Persian Sources in the Comprehensive Book of Rhazes*, p. 276 ff.

91 Maimonides, *Aphorisms 5*, p. 71 ff.

92 Galen, *Inst. Log.*, p. 42.

writes that the term ‘indication,’ in Greek *endeixis*, is “a medical term and is preserved in the modern medical use of the word”.<sup>93</sup>

**3:4 These dreams, as Hippocrates mentioned:** In *Epidemics I*, Hippocrates gives a story of Erasimus, who manifested a fever after supper, and suffered from delirium, distress, exacerbation, convulsions with sweating, discomfort, fear, and dreams. His urine was dark with round particles in it, and towards the end of the fifth day he died.<sup>94</sup> The symptoms resemble the indications of overfilling described in this paragraph. Dreams indicating multitude of blood are not mentioned in *Dreams* or *Regimen IV* by Hippocrates. In *Epidemics VI*, Hippocrates mentions the following: “Overfullness is apparent, the blood vessels are visible.”<sup>95</sup> Perhaps the word ‘dreams,’ أحلام, should be read as ‘signs,’ أعلام, in this case. It is also very possible that what al-Rāzī is referring to is Galen’s commentary on Hippocrates’ *Humours*, see below.

**Whoever sees snow and rain, this indicates the large quantity of phlegm:** The quoted part in Ms. Escorial does not correspond to the content of Rufus’ *Medical Questions*. On the contrary, the passage does look very similar to Galen in his commentary on Hippocrates’ *Humours*: “Dreams belong to the things that regularly indicate the disposition of the body. If someone see fire in a dream, then this man suffers from yellow bile. If rain appears, then know that cold liquid is in overabundance. Likewise also if [someone see] snow, ice, or hail, this indicates cold phlegm; if he thinks that he is in a malodorous place, this indicates the putrefaction of the humours. If he sees the crests of cocks, or something flaming red, this indicates that blood is in overabundance. If he sees something dark-coloured or thinks that he is in a dark place, then this indicates breaths [i.e., flatulence].”<sup>96</sup>

**Dreams:** Dreams too are a strong prognostic sign. “For Rufus the way melancholy affects the mind is not simply that it leads to odd, morbid, anxious thoughts or dreams.”<sup>97</sup> In the quoted work, *Medical Questions*, Rufus of Ephesus provides many examples in which dream interpretation has been used in

93 Galen, *Inst. Log.*, p. 100.

94 Hippocrates, *Epidemics I* (LCL 147: 207–209).

95 Hippocrates, *Epidemics VI*, Section III, 17. (LCL 477: 230–231).

96 Galen’s Commentary on Hippocrates’ *Humours*, 2.2 [16.219.9–220.3 Kühn]. I am very grateful to Professor Peter Pormann for his help with identifying the quote in this passage.

97 Swain, *Social Stress and Political Pressure: On Melancholy in Context*, p. 121.

diagnostics of overfilling.<sup>98</sup> Cf. Mattern: “Following Hippocrates and other predecessors, Galen recognized several sources of dreams, including some that might make sense to modern readers. A dream could reflect an imbalance of the humours, and a wrestler suffering from an excess of blood, for example, dreamed of standing in a cistern of blood; snow or ice would represent the cold, wet humour of phlegm, and so on.”<sup>99</sup>

3:5 **Overfilling affecting the strength:** Galen: “If, then, some people who are still engaging in their usual occupations complain of feeling heavy, slow, lazy and sluggish, this is dynamic plethos.”<sup>100</sup>

3:6 **Even if these signs [occur] ...:** Understood as even if the signs that are characteristic for overfilling affecting the strength occur, it may be the case of overfilling relating to the vessels, and whether it is the first or the second, the two can be differentiated in the urine, pulse, and other things already mentioned.

**Yellowish green:** Ms. Escorial reads فجاجة, *faǧāǧa*, meaning acerbic, understood as yellowish green, as for an unripe fruit.<sup>101</sup> Iyōḃ Urhāyā: “Urine that resembles olive oil, combined with acute fever, is an indication of (looming) mental confusion and death, for it suggests that the intensity of the fever has consumed (most of) the moisture (in the body), to the point of melting the fat, in which case the brain dries out very much.”<sup>102</sup>

3:7 **Both of these ... evacuation:** Galen: “Both kinds call for evacuation, whether they occur in a sick man or in one in health.”<sup>103</sup>

**Raw humours:** “Crude or raw humour is material, derived from nutriment, that has not been properly cooked or concocted by the innate heat.”<sup>104</sup>

**Especially if it is summer:** Ms. Escorial clearly reads “وخاصة إذا كان الوقت ضيقاً” *wa-ḥāṣṣatan idā kāna al-waqt ḍayyiḡan* ‘if the time is limited,’ but it is likely

98 Rufus, *Quaestiones medicinales*, §§ 28–33 (pp. 74–77).

99 Mattern, *Prince of Medicine*, p. 174.

100 Galen, *Cur. Rat. Ven. Sect.*, p. 71.

101 Dozy, *Supplément aux dictionnaires arabes*, p. 242.

102 Kahl, *The Sanskrit, Syriac and Persian Sources in the Comprehensive Book of Rhazes*, p. 298.

103 Galen, *Cur. Rat. Ven. Sect.*, p. 71.

104 Galen, *Cur. Rat. Ven. Sect.*, p. 76, footnote 29.

that 'صيفا' *ṣayfan* 'summer' is meant, referring to warm weather, as in Galen's writings: "But where there is heavy oppression by plethos it is not always desirable to remove blood. It is possible for crude humour to collect in the body, in which event it is necessary to consider precisely, not only to what extent the faculties are in good condition, but also to what extent the humour has increased. For when the faculties have already been broken up by such conditions, they are liable, if phlebotomy is used, to sink to their last extremity, so that it is no longer possible to restore them. When this happens the danger is great, and particularly when, in warm weather, there is an attack of fever while the stomach is disordered, or when the whole body is by nature soft and damp in its temperament."<sup>105</sup> Reading is also supported by Qusṭā ibn Lūqā, *Faṣd*.<sup>106</sup>

3:8 **Stomachics:** *الاسطماخيقيات* *al-uṣṭumāḥīqūnāt*, compound purgative pills. See prescription in the index of prescriptions.

**Bitter hiera:** *iyārağ fiqrā*, from the Greek ἱερὰ πικρά = bitteres Heiligmittel,<sup>107</sup> i.e., 'divine bitter';<sup>108</sup> ἱερὰ, a name for several medicines in the Greek pharmacological tradition, e.g., ἱερὰ πικρά.<sup>109</sup> Prescription in the index of prescriptions. According to Sābūr ibn Sahl, it is "useful against headaches, moistness of the stomach, rheumatic pain, colic, vomiting that results from colic and moisture, hemiplegia, paralysis of the facial nerve, laxity of the organs, and dumbness".<sup>110</sup>

**Entering the bathhouse:** For more on bathing, see Galen, *Meth. Med. III, X* (LCL 518).

**Moderate oils:** Ms. Escorial reads only 'moderate oils.' Ms. Parma adds 'משיחים השמנים הישרים', 'massages with moderate oils.' For more on rubbing and anointing with oils, see, e.g., Galen, *Meth. Med. III, XII*, chapter 3 (LCL 518). The rubbing can be moderate too, see Galen: "the rubbing is moderate in these cases so as to warm the body".<sup>111</sup>

105 Galen, *Cur. Rat. Ven. Sect.*, p. 76.

106 Qusṭā ibn Lūqā, *Kitāb fi l-Faṣd*, p. 314.

107 Fellmann, *Das Aqrābādīn al-Qalānisi*, p. 216.

108 Kahl, *Sābūr ibn Sahl; The Small Dispensatory*, p. 72.

109 Liddell & Scott, *A Greek-English Lexicon*, Vol I, p. 820.

110 Kahl, *Sābūr ibn Sahl; The Small Dispensatory*, p. 72.

111 Galen, *Meth. Med. II, VII* 491K (LCL 517: 288–289).

**scarcely nourishing foods:** Cf. Nasrallah, *Annals of the Caliphs' Kitchens*: Foods with poor nutrition include those low in density, excessively dry foods like salted meat, and those producing too much excretion such as trotters, tripe, intestines, tallow, ears, lungs, poultry, barley bread, bread with bran, and all vegetables. Astringent foods such as olives, pistachios, walnuts, and almonds also offer poor nourishment. Fish, gourd, pomegranate, mulberry, plums, and apricot are poor sources of nutrition due to their high moisture content and rapid nutrient dissolution.<sup>112</sup> This is in contrast with highly nourishing foods that are dense and nourishing when fully digested, even in small amounts. Travellers and convalescents who cannot eat a lot need such foods. Highly nourishing foods include beef, brain, heart, gizzards of all birds, fish with thick flesh, fine white flour, fava beans, chickpeas, beans, lentils, dates, acorn, chestnut, turnip, milk, and red sweet wine.<sup>113</sup>

**3:9 Whoever has suffered from haemoptysis ...:** Galen: “Those who have been temporarily cured by spitting blood, but nevertheless have a condition in the parts round the chest and lungs by a virtue of which, if a slightly increased amount of blood should accumulate in them, some vessel will again have its mouth forced open or be ruptured—these patients must be phlebotomised at the beginning of the spring, even if there are as yet no symptoms anywhere in the body.”<sup>114</sup>

**In the same manner, for anyone ...:** Galen: “it is better to phlebotomise in advance rather than wait for some clear sign of plethos to show itself.”<sup>115</sup> In general, according to Qusṭā ibn Lūqā, one has to phlebotomise the patient before a severe illness is being generated, given that the symptoms of plethos suggest that one of the mentioned illnesses would befall.<sup>116</sup>

**[Swollen] veins in the anus:** Ms. Escorial reads “veins in the anus”, while Ms. Parma reads פתיחת הגידים ‘burst veins’ [in the anus].

**Continuous and sanguine fevers:** Maimonides in *Aphorisms* 23: ““Continuous” fevers and “perpetual” [fevers] are synonyms. Similarly, the [fever] called

112 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 735.

113 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 732.

114 Galen, *Cur. Rat. Ven. Sect.*, p. 77.

115 Galen, *Cur. Rat. Ven. Sect.*, p. 77.

116 Qusṭā ibn Lūqā, *Kitāb fi l-Faṣd*, pp. 332–333.

“synonchous” is continuous, as is the continuous burning [fever]. The term “burning” has been given to it only because of severe heat.”<sup>117</sup> According to Bos, blood fever is synochous fever.<sup>118</sup> See also Hippocrates in *Critical Days*: “About critical days, I have already spoken before. Fevers have their crises on the fourth day, the seventh, the eleventh, the fourteenth, the seventeenth, and the twenty-first; and subsequent to these acute diseases, on the thirtieth, the fortieth, and then the sixtieth. When it goes beyond these numbers, the state of the fevers is already chronic.”<sup>119</sup>

3:10 **Spring:** Galen: “And as for those who go down every year in summer with plethoric diseases, they too should be evacuated at the onset of spring.”<sup>120</sup> For more on the impact of seasons, see commentary for §1:2.

**Purgation:** This can be done in two manners, either *per os*, or *per rectum*. Galen: “This is also what we were taught from the position of the parts: to insert something *per rectum* for the intestines situated below and to give something from above (*per os*) for those structures above—the stomach itself, the spleen, and the esophagus.”<sup>121</sup> “Ulcers in the large intestines have a greater need for medications inserted *per rectum* because this is nearer. Ulcers in the small intestines need both because this is further on and is in the middle in terms of position for medication taken from above (*per os*) and inserted from below (*per rectum*).”<sup>122</sup>

**Phlebotomy may also be beneficial ...:** Galen in *Cur. Rat. Ven. Sect.*: “Not only is phlebotomy of great benefit in the presence of plethos, either of the dynamic variety or of the kind known as plethos by filling, but it is useful also when inflammation is beginning in the absence of plethos, as a result either of a blow, or pain, or atony of the parts; for the pain attracts blood to it.”<sup>123</sup> Galen in *Meth. Med. III*: “Phlebotomy, since it does not dissipate the capacity, is not among those [treatments] directed against a symptom, but is one of those which eradicates the whole condition.”<sup>124</sup>

117 Maimonides, *Aphorisms* 23, 30, p. 35.

118 Maimonides, *Rules*, p. 15.

119 Hippocrates, *Critical Days*, 11 (LCL 509: 310–311).

120 Galen, *Cur. Rat. Ven. Sect.*, p. 88.

121 Galen, *Meth. Med. II, XIII*, 922K (LCL 518: 390–391).

122 Galen, *Meth. Med. I, IV*, 297K (LCL 516: 450–451).

123 Galen, *Cur. Rat. Ven. Sect.*, p. 78.

124 Galen, *Meth. Med. III, XII*, 819K (LCL 518: 238–239).

**Weakness of a part:** Galen in *Meth. Med. III*: “I call a weak part either one that is very *dyskratic* in nature (for such parts are different in different ways), or one that has become *dyskratic* during some preceding disease, or one brought to a *dyskrasia* at the present time.”<sup>125</sup>

4:2 **Really knowing the quantity:** Galen: “Nothing shows so clearly that the medical art is in practice a matter of guesswork as the question of the amount of each remedy. We often know exactly that the time for administering food or drink, whether cold or hot, is at hand; we cannot be sure, however, of how much we ought to give. It is the same with purgatives; we sometimes know for certain that a drug purging yellow bile, black bile, phlegm or serous superfluities should be given to the patient; yet we do not know with any certainty the amount that should be administered. A dose of such preparations cannot be corrected. Once the drug has been swallowed and has entered the belly it must of necessity all be digested; nor can one, if the patient has already been purged more than is desirable, remove any part of what has been administered. The greatest advantage of phlebotomy is that you can stop the evacuation when you wish, and afterwards at any time you choose allow it to flow again up to whatever quantity may seem good to you.”<sup>126</sup>

4:3 **When there is a lot of blood in the body ... vital parts:** Corresponds to overfilling relating to vessels; see commentary for § 3:3. Galen: “For in those patients who appear to you to have a plethos of seething blood, you must try to evacuate it as quickly as possible, before it descends on some vital part”<sup>127</sup> According to Temkin, the principal parts are “brain, heart, liver, and testes”.<sup>128</sup> For the dangers of too much blood in the body, see Qusṭā ibn Lūqā, *Kitāb fī l-Faṣd*, pp. 304–305.

**This fever, even if it is continuous ...:** Maimonides identifies four periods of illness:<sup>129</sup> “أوقات المرض الكلية أربعة: ابتداء وتزايد وانتهاء وانحطاط.” Perhaps in Ms. Escorial the words ‘rise’ and ‘increase’ are denoting the same period, in which case this number, four, would match. Otherwise, the words in Ms. Escorial are

125 Galen, *Meth. Med. III*, XI, 805K (LCL 518: 214–217).

126 Galen, *Cur. Rat. Ven. Sect.*, pp. 84–85.

127 Galen, *Cur. Rat. Ven. Sect.*, p. 85.

128 Temkin, *Galenism*, p. 102.

129 Maimonides, *Aphorisms II*, I, p. 20.

identical: beginning, rise, increase, climax and decline ابتداء صعود تزيد انتهاء انحطاط *ibtidā', šu'ūd, tazayyud, intihā', inhiṭāṭ.*

**Evacuation should [last] until the patient loses consciousness:** Galen: "When, however, there is a plethos of seething blood, enkindling a very acute fever, there is need for copious evacuation. One must try to evacuate this blood to the point of fainting".<sup>130</sup>

**The body becomes cold immediately after unconsciousness:** "Venesection can extinguish the flame of continuous fevers, in which it is particularly useful if the veins are distended. It cools the body and abolishes or reduces the fever, particularly if pressed to the point of loss of consciousness."<sup>131</sup>

**4:4 Examining the pulse:** Galen: "It is good, however, to pay attention to the diminution of the pulse, feeling it while the blood is still flowing, as is usually done in all patients who are being phlebotomised, so that you will never negligently cause your patient death instead of loss of consciousness, a thing I know has happened to three doctors."<sup>132</sup>

**Colour and consistency:** "It is often possible to judge it from a change in colour, which may be of two kinds: sometimes from the actual colour of the blood as it flows, sometimes from the colour of the patient's complexion."<sup>133</sup>

**4:5 Whoever has a swelling... change:** Galen: "In patients who have a large inflammatory focus near the vein that has been opened, it is best to await a change both in the colour and in the consistency of the blood, as Hippocrates has also explained in his book *Regimen in Acute Diseases*, speaking of pleurisy."<sup>134</sup> Hippocrates in *Regimen in Acute Diseases*: "Venesection, however, does not relieve the pain so well unless it extends to the collarbone. If the pain does not give way before the hot applications, do not continue them for long; continued heat dries the lungs and is apt to cause empyema. Should, however, the pain show signs of extending to the collarbone, or should there be a weight in the fore-arm, or in the region of the breast, or above the diaphragm, you must open the inner vein at the elbow, and do

130 Galen, *Cur. Rat. Ven. Sect.*, p. 85.

131 Brain, *Galen on Bloodletting*, p. 128.

132 Galen, *Cur. Rat. Ven. Sect.*, p. 86.

133 Brain, *Galen on Bloodletting*, p. 30.

134 Galen, *Cur. Rat. Ven. Sect.*, p. 88.

not hesitate to take away much blood until it flows much redder, or until it becomes livid instead of clear and red. Either of these may occur.”<sup>135</sup> The same is stated in Qusṭā ibn Lūqā, *Kitāb fi l-Faṣd*, where Qusṭā refers to Hippocrates.<sup>136</sup>

**Henna:** حناء, *ḥinnāʾ*, a reddish-orange colour;<sup>137</sup> could thus be read in Ms. Escorial as حنائيا, *ḥinnāʾiyyan*.

5:2 **That originate ...:** Hippocrates confirms that the pulsatile veins originate from the heart, and the non-pulsatile veins from the liver. See Hippocrates: “Root of veins, liver; root of arteries, heart.”<sup>138</sup> Corresponds to al-Rāzī’s *al-Kitāb al-Manṣūrī*: “The arteries arise from the left cavity of the heart.”<sup>139</sup> For a complete chapter on arteries, see De Koning, *Trois Traités d’Anatomie Arabes*, chapter 6 (pp. 42–47).

**Benefits:** Understood as “and the benefits of phlebotomising them.”

**I begin from the head:** Arranging the diseases from head to foot, as seen in Ms. Escorial, was common for Graeco-Arabic medical literature.<sup>140</sup>

5:3 **Four veins behind the ears:** Possibly posterior auricular vein, that is behind the ear, and superficial temporal vein, that is on the other side. The two connect above the ear.<sup>141</sup> Qusṭā ibn Lūqā mentions that phlebotomising the veins behind the ears is beneficial for treating vertigo, as well as other chronic illnesses in the head.<sup>142</sup>

**Leprosy:** Ullmann<sup>143</sup> defines the Arabic term جذام *ḡudām* as both leprosy and elephantiasis, yet in Ms. Escorial the latter is distinguished from leprosy by a different term, داء الفيل *dāʾ al-fīl*. For a broader discussion on this, see commentary for §12:6.

135 Hippocrates, *Regimen in Acute Diseases*, XXII (LCL 148: 80–81).

136 Qusṭā ibn Lūqā, *Kitāb fi l-Faṣd*, p. 358 ff.

137 Wehr, *A Dictionary of Modern Written Arabic*, p. 244.

138 Hippocrates, *Nutriments*, XXXI (LCL 147: 352–353).

139 De Koning, *Trois Traités d’Anatomie Arabes*, p. 42.

140 Perho, *The Prophet’s Medicine*, p. 63.

141 Netter, *Atlas of Human Anatomy*, plate 10.

142 Qusṭā ibn Lūqā, *Kitāb fi l-Faṣd*, pp. 401–402.

143 Ullmann, *Islamic Medicine*, p. 88.

5:4 **Three veins that are arteries:** Ms. Escorial reads وثلاثة عروق في الشرايين *wa-ṭalāṭat ‘urūq fī l-šarānīn*, suggested correction وثلاثة عروق وهي شرايين *wa-ṭalāṭat ‘urūq wa-hiya šarāyīn*, ‘three veins that are arteries,’ as stated in Ms. Parma: וג' גידים והם שרינים, ‘and three veins that are arteries.’ These are possibly anterior auricular arteries and posterior auricular artery, alternatively one of the anterior auricular arteries, posterior auricular artery, and superficial temporal artery.<sup>144</sup>

**Phlebotomising them is beneficial:** Ms. Escorial seems to refer to the latest mentioned artery, i.e., the visible one. Ms. Parma reads ותועיל הקזתם *ve-to'el haqqazatam*, ‘phlebotomising them is beneficial’, supporting the view that it is the question of all these three arteries. The reference to Hippocrates below supports the view that it is three arteries in question.

**Whoever had these [veins] cut, will not procreate:** Hippocrates talking about the Scythians: “They cure themselves in the following way. At the beginning of the disease they cut the vessel behind each ear. After the blood flows out, sleep comes over them from their weakness, and they go to bed. Later they wake up, some being cured and others not. Now, in my opinion, by this treatment their seed is destroyed; for by the side of the ear are vessels which, when someone cuts them, make the person cut sterile, and so I believe it is these vessels they are cutting.”<sup>145</sup> I have not been able to consult Galen’s commentary on the work in question. According to Nutton (2004), the account of the infertility of the Scythians can be traced back to an eyewitness report, likely written by the author himself, and could potentially be explained by modern medical knowledge regarding the high iron content in certain local rivers.<sup>146</sup>

5:5 **Two veins in the back of the head near the hollow of the neck:** Possibly occipital artery and occipital vein, or alternatively occipital vein, and mastoid emissary vein or meningeal branch of occipital artery.<sup>147</sup>

**The hollow of the neck:** the Arabic word النقرة *al-nuqra* is translated both as ‘occiput’ and ‘nape of the neck’ by Spink and Lewis;<sup>148</sup> نقرة القفا *nuqrat al-qafā*

144 Netter, *Atlas of Human Anatomy*, plate 10.

145 Hippocrates, *Airs, Waters, Places*, Chapter 22. (LCL 147: 132–133).

146 Nutton, *Ancient medicine*, p. 76.

147 Netter, *Atlas of Human Anatomy*, plate 10.

148 Albucasis, *Albucasis on Surgery and Instruments*, p. 656 ff.

as ‘hollow of the neck’ by Fonahn.<sup>149</sup> When talking about cupping this region, Galen seems to use the term ‘occiput.’<sup>150</sup>

**Watery discharge:** Johnston explains the term ‘discharge’ as “A disease of the eye causing continual watery discharge.”<sup>151</sup>

*Intiṣār:* This term requires a thorough discussion. Both *intiṣār* and *intiṭār* appear in Ms. Escorial. Ullmann translates the Arabic term *intiṣār* as Liderweiterung.<sup>152</sup> The term is spelled as *intiṣār* in al-Rāzī’s *al-Kitāb al-Ḥāwī*, book II, ‘On the illnesses of the eye.’<sup>153</sup> However, in one instance, we find the term انتشار *intiṭār* with the following explanation (with my translation):

وأما انتشار الأشفار فضربان إما من رطوبة حادة يصير إليها كالحال في داء الثعلب وإما لعدم غذائها كالحال في الصلع وهذان لا حمرة ولا صلابة معهما في الأجفان ومنه نوع آخر يعرض معه غلظ الأجفان وحمرة وصلابة فيها.<sup>154</sup>

“As for *intiṭār* [i.e., dispersal] of the palpebral margin, it is of two kinds: either due to acute moisture that reaches it as in the case of alopecia, or either due to the lack of its nutriment as in the case of baldness, and no redness nor hardness in the eyelids occurs with these two, and there is another type with which coarseness of the eyelids with redness and hardness occurs.”

This is similar to that described by Ḥunayn ibn Iṣḥāq in his book *On the Symptoms of Eye-Diseases*, where *intiṭār* is translated as ‘falling out of the lashes,’ and two kinds are given: one with acrid moisture resulting in alopecia, in Greek *madarosis*; or the other accompanied by thickening, hardness and ulceration of the lids, in Greek *ptilosis*.<sup>155</sup> The ailment in question has other explanations too: “(synchysis, lit. ‘widening/extension’) of the eye is a dilation (*ittisāʿ*) of the pupil (*ḥadaqa*). [...] In modern ophthalmology the term synchysis stands for an ailment of the vitreous body. This is in accordance with a definition in another writing by Galen. The Arabic term *intishār*, which was regularly defined as a dilation of the pupil, may also stand for other diseases of the

149 Fonahn, *Arabic and Latin Anatomical Terminology: Chiefly from the Middle Ages*, 103.

150 Galen, *Meth. Med. II*, v, 6., 332K, LCL 517: 40–41 (pp. 40–41).

151 Galen, *Dis.*, p. 60.

152 Ullmann, *Die Medizin im Islam*, p. 142.

153 Rhazes, *Ḥāwī II*, p. 168 ff.

154 Rhazes, *Ḥāwī II*, p. 36.

155 Ḥunayn ibn Iṣḥāq, *ʿAṣr maqālāt fi l-ʿayn*, Book 6, p. 61—Arabic equivalent p. 133.

eye with similar symptoms, such as amaurosis and mydriasis.”<sup>156</sup> In *Aphorisms* 23, Maimonides defines *intišār* as follows: “The cataract that occurs in the eye and that the physicians call “extension” lies between the crystalline humor and the hornlike tunic.”<sup>157</sup> In his book, *Amrāḍ al-‘ayn wa-‘lāğātuhā min kitābay al-Mu‘ālağāt al-Buqrāṭiyya wa-Firdaws al-Ḥikma*, al-Ṭabarī explains *intišār* as *tawassu‘ al-ḥadaqa*, i.e., mydriasis, as the editors of the work in question have added.<sup>158</sup>

5:6 **A vein comes to the forehead:** The frontal vein, *vena frontalis*.<sup>159</sup>

**Phlebotomising the two:** Galen: “Similarly when a vein in the forehead is cut, heaviness of the head and pains that have become chronic as a result of plethos are usually noticeably relieved. [...] In the same way pains in the back of the head, whether incipient or already established, are relieved by cutting the vein in the forehead.”<sup>160</sup>

**Phlebotomising the two is beneficial:** Ms. Escorial reads *وهي نافعة wa-hiya nāfi‘a*, ‘they are beneficial.’ It is mentioned that the branches are two, or sometimes more, and directly referred to in the dual form. Therefore, the suggested correction is *وفصدهما نافع wa-faṣduhumā nāfi‘*. Correction supported by Ms. Parma: *ve-to‘il haqqazatam*, ‘phlebotomising them is beneficial’—Hebrew, with a more restricted usage of the dual form, uses the plural form.

5:7 **Two curved veins in the temples:** Probably the frontal branches of superficial temporal artery, or one branch of the superficial temporal artery and zygomaticoorbital artery.<sup>161</sup> Qusṭā ibn Lūqā mentions that the arteries in the temples should be phlebotomised in case warm, fine matter is flowing into the eyes,<sup>162</sup> which corresponds to what al-Rāzī states in his *The Book of the Crown* (*Kitāb al-Iklīl*): “bleeding them is useful against a thin, hot residue inside the eye, and chronic headache”.<sup>163</sup>

156 Ibn Ġanāḥ II, pp. 785–786.

157 Maimonides, *Aphorisms* 23, p. 53.

158 Al-Ṭabarī, *Amrāḍ al-‘ayn*, p. 201. I would like to express my gratitude to Scarlett Wood for identifying this source.

159 Fonahn, *Arabic and Latin Anatomical Terminology: Chiefly from the Middle Ages*, p. 76.

160 Galen, *Cur. Rat. Ven. Sect.*, p. 94.

161 Netter, *Atlas of Human Anatomy*, plate 10.

162 Qusṭā ibn Lūqā, *Kitāb fi l-Faṣḍ*, p. 401.

163 Al-Rāzī, *Kitāb al-Iklīl*, p. 143 (f. 30<sup>b</sup>).

**Phlebotomising the two is done by ...:** Cf. al-Rāzī, *Kitāb al-Iklīl*, “in order to prevent unstoppable bleeding caused by a retraction of their two ends, these veins must only be punctured, and opened up with an arrowhead”.<sup>164</sup>

**5:8 Hot, fine, pricking matter in the membranes:** What in Ms. Escorial is called ‘fine,’ Galen calls ‘spirituous.’ These, among many other medical statements found in Ms. Escorial, sound very much like Galen’s words: “These experiences persuaded me often to open arteries in the extremities of the limbs, and indeed in the head too, in the case of all pains that seemed to have their origin from a hot and spirituous quality, and particularly in the membranes. In these, the pain has a pricking quality and spreads out gently, since the pricking sensation is located in one part as if this were the centre of the affected region, and the whole part round this centre has a sensation of tension.”<sup>165</sup>

**5:9 Two veins in the inner corners of the eye:** By Spink and Lewis translated as ‘lachrymal veins’.<sup>166</sup> Galen: “So too cutting the vein alongside the greater canthus is good for the crusts on the eyes that remain after inflammations.”<sup>167</sup>

**Ophthalmia:** The Arabic word *رماد*, *ramad* is either ophthalmia, i.e., eye inflammation, or more specifically conjunctivitis, Bindehautentzündung.<sup>168</sup>

**Rhyas:** Maimonides: “If the flesh in the inner angle of the eye disappears, it is an illness that is called *dam’a* [rhyas].”<sup>169</sup> The term ‘rhyades’ features in Galen, *Meth. Med. III*: “Also from this same class are the rhyades involving the greater canthus [of the eye] when the canthus is either reduced still more or destroyed altogether. When it is destroyed altogether, the disease becomes completely incurable; when it is reduced, it is treated by moderate astringents along with prior purging, first of the whole body and second of the head.”<sup>170</sup>

164 Al-Rāzī, *Kitāb al-Iklīl*, p. 143 (f. 30<sup>b</sup>).

165 Galen, *Cur. Rat. Ven. Sect.*, pp. 98–99.

166 Albucasis, *Albucasis on Surgery and Instruments*, p. 630.

167 Galen, *Cur. Rat. Ven. Sect.*, p. 94.

168 Ullmann, *Die Medizin im Islam*, p. 235.

169 Maimonides, *Aphorisms* 23, 71, p. 55. The word ‘rhyas’ appears in brackets in the cited edition.

170 Galen, *Meth. Med. III*, XIV 1002K (LCL 518: 508–511).

5:10 **One vein in the tip of the nose:** Possibly external nasal artery or lateral nasal artery.<sup>171</sup>

**Polyps:** Ms. Escorial reads ‘haemorrhoids,’ in Arabic *bāsūr*, in plural *bawāsīr*, in the nose, but probably what is meant is polyps, in Arabic *nāsūr*, in plural *nawāsīr*. Cf. Maimonides, *Aphorisms* 23: “The tumor that forms inside the nose as if it were a fleshy excrescence is called *nāšūr* and also ‘polypus.’” For the sake of clarity, I have chosen to limit the usage of *bāsūr* to haemorrhoids, and use the term *nāsūr* for polyps in this edition.

5:11 **Two veins inside the tongue:** possibly deep lingual artery and vein.<sup>172</sup> As to phlebotomising them, see Galen: “Parts in the region of the throat and trachea which are much inflamed are greatly benefited at the beginning by venesection at the elbow, but after the beginning by letting blood from the tongue; both the veins in it are cut.”<sup>173</sup>

5:12 **Two veins inside the chin:** Possibly lingual vein, one on each side.<sup>174</sup>

5:13 **Jugular veins:** *vena jugularis interna*, and *vena jugularis externa*, discussed in Galen, *UP*, II, 436, p. 723.

**Two veins that are connected to the throat:** possibly common carotid arteries, *arteria carotis communis*, discussed in Galen, *UP*, II, 436, p. 723.

5:14 **Axillary veins:** الإبطي *al-ibṭī*, axillary vein, that according to ‘Alī ibn al-‘Abbās is synonymous to basilic vein.<sup>175</sup> Possibly brachial artery, one in each arm, unless basilic vein running along the brachial artery is meant.<sup>176</sup> Galen suggests different veins to be cut, cf. Galen, *Meth. Med. III*: “So too is it better to open a vein if these parts are affected; the (humero-)cephalic vein in the arm or, if this is not visible, the median cubital [vein], and if the liver, thorax, lungs or heart [are involved], the inner (basilic) vein.”<sup>177</sup>

171 Netter, *Atlas of Human Anatomy*, plate 42.

172 Netter, *Atlas of Human Anatomy*, plate 65.

173 Galen, *Cur. Rat. Ven. Sect.*, p. 94.

174 Netter, *Atlas of Human Anatomy*, plate 70.

175 Fonahn, *Arabic and Latin Anatomical Terminology: Chiefly from the Middle Ages*, p. 72.

176 Netter, *Atlas of Human Anatomy*, plate 419.

177 Galen, *Meth. Med. III, XIII*, 904K (LCL 518: 362–363).

5:15 **A Greek name:** It surely means ‘head’ in Greek: κεφαλή: head.<sup>178</sup>

**Jugular fossa:** In 5:17 Ms. Escorial reads اللثة *al-lita*, and in 5:18 اللية *al-liyya*. Both are deemed corrupt, supported by Ms. Parma that reads אלהבה *al-labba*, i.e., the jugular fossa.<sup>179</sup> For *labba*, Ullmann gives σφαγγή,<sup>180</sup> throat.<sup>181</sup> In Qusṭā ibn Lūqā, *Kitāb fi l-Faṣd*, the terms are دون الرقبة *dūn al-raqaba* (below the neck) and فوق الرقبة *fawq al-raqaba* (above the neck).<sup>182</sup> See also Galen: “There are three ways on performing phlebotomy at the elbow: inner, outer, and middle. The inner is helpful for those who suffer from conditions of the lower part of the neck; the outer where parts above this, or the face or head, are involved.”<sup>183</sup>

5:16 **Basilic vein:** in Ms. Escorial described as عرق البطن *‘irq al-baṭn*, another name for *vena basilica*.<sup>184</sup>

**Rīāsa:** The Greek term for basilic vein is derived from the Greek word *basilikos*, that translates to kingly, regal, royal.<sup>185</sup>

5:17 **Median cubital vein:** also known as median antebrachial vein.<sup>186</sup> Galen: “The middle site sometimes has both the branching veins extending to the end of the arm, and uniting there, and sometimes running to unite quickly with each other at the bend of the elbow. Sometimes one of them is prominent, the other indistinct. When, therefore, the vein that ought to be used for the parts affected is indistinct, you may have recourse to one of the middle ones; try, for preference, to cut the one that branches from the proper vein.”<sup>187</sup>

5:19 **Vena cephalica pollicis:** *ḥabl al-dīrā*, lit. ‘cord of the arm,’<sup>188</sup> in Latin *vena cephalica pollicis*, or *funis brachii*.<sup>189</sup>

178 Montanari, *The Brill Dictionary of Ancient Greek*, p. 1120.

179 Fonahn, *Arabic and Latin Anatomical Terminology: Chiefly from the Middle Ages*, p. 81.

180 Ullmann, *Wörterbuch zu den griechisch-arabischen Übersetzungen des 9. Jahrhunderts*, p. 926.

181 Liddell & Scott, *An Intermediate Greek-English Lexicon*, p. 784.

182 Qusṭā ibn Lūqā, *Kitāb fi l-Faṣd*, p. 371.

183 Galen, *Cur. Rat. Ven. Sect.*, p. 91.

184 Fonahn, *Arabic and Latin Anatomical Terminology: Chiefly from the Middle Ages*, p. 75.

185 Montanari, *The Brill Dictionary of Ancient Greek*, p. 379.

186 Netter, *Atlas of Human Anatomy*, plate 406.

187 Galen, *Cur. Rat. Ven. Sect.*, p. 91.

188 Albucasis, *Albucasis on Surgery and Instruments*, p. 651.

189 Fonahn, *Arabic and Latin Anatomical Terminology: Chiefly from the Middle Ages*, p. 67.

5:20 **A branch of the basilic vein:** Possibly one of the intercapitular veins.<sup>190</sup>

**Phlebotomising it is beneficial:** Galen is more specific on which side to phlebotomise in order to treat the spleen and liver. Galen: “When the liver is starting to become inflamed, [cut] the veins in the right arm and, when the spleen is involved, the opposite (i.e. in the left arm).”<sup>191</sup>

5:21 **Vena salvatella:** i.e., الأسيلم *al-usaylim*, the *vena salvatella*, which is a specific vein between the little finger and the ring finger. The word only occurs in the diminutive form.<sup>192</sup> Possibly one of the three intercapitular veins.<sup>193</sup> The Arabic word surely is derived from the word *salāma*, which means soundness, safety, security,<sup>194</sup> as stated in Ms. Escorial. As to phlebotomising it, see Galen: “So also when the spleen is affected, incision of the vein in the ring finger of the left hand is of benefit, just as it would be if you were to cut the inner vein at the elbow; for evacuation of blood from the left hand helps a disordered spleen considerably.”<sup>195</sup> Qusṭā ibn Lūqā adds that while phlebotomising the *vena salvatella* in the left hand is beneficial for pain in the spleen, phlebotomising the same vein in the right hand is beneficial for pain in the liver.<sup>196</sup>

5:22 **Two veins in the popliteal fossae:** Possibly popliteal vein, one in each leg.<sup>197</sup>

**Phlebotomising them:** Galen: “In respect to the kidneys, bladder, genitalia and uterus, [cut] those in the legs, especially those in relation to the popliteal fossa; if not, cut those beside the ankle.”<sup>198</sup> Qusṭā ibn Lūqā mentions that phlebotomising the veins in the arm for problems of the uterus, on the contrary, causes severe damage, as drawing the blood to the opposite direction causes the menstrual blood to be withheld.<sup>199</sup>

190 Netter, *Atlas of Human Anatomy*, plate 406.

191 Galen, *Meth. Med. III*, XIII, 904K (LCL 518: 362–363).

192 Lane, *An Arabic-English Lexicon*, p. 1416.

193 Netter, *Atlas of Human Anatomy*, plate 406.

194 Wehr, *A Dictionary of Modern Written Arabic*, p. 496.

195 Galen, *Cur. Rat. Ven. Sect.*, p. 90.

196 Qusṭā ibn Lūqā, *Kitāb fi l-Faṣḍ*, p. 369.

197 Netter, *Atlas of Human Anatomy*, plate 475.

198 Galen, *Meth. Med. III*, XIII, 904K (LCL 518: 362–363).

199 Qusṭā ibn Lūqā, *Kitāb fi l-Faṣḍ*, pp. 377–378.

... **makes the menstruation flow:** Galen: “When the menses are suppressed, however, those [veins] in the legs are invariably used.”<sup>200</sup> See also commentary for §14:9.

**Chronic ulcers:** Galen says doctors call these *kakoethical* ulcers. Galen: “It is not actually this chronicity itself, or being called and being chronic, which indicates the appropriate treatment, but from this [chronicity] it is possible to infer the bad state of the ulcerated part. [---] Chronicity in ulcers is, then, a sign of *kakochymia*. The discovery of what is useful is not, however, from the chronicity but from the *kakochymia*. Therefore, there are these three signs that follow each other: the sign, the condition, and the treatment. Chronicity is the sign, *kakochymia* is the condition, and the evacuation of the *kakochymia* is the treatment.”<sup>201</sup>

5:23 **Sciatic vein:** in Arabic عرق النسا *irq al-nasā*,<sup>202</sup> which Fonahn translates as “*vena saphena externa*, the external saphenous vein.”<sup>203</sup>

**Phlebotomising the sciatic vein at the ankles:** In this case al-Rāzī seems to differ from Galen, as al-Rāzī seems to suggest phlebotomising the ankles, while Galen has stated rather the contrary. Galen: “I have known diseases of the hip cured in one day by an evacuation through the legs; such of them, that is, as have not arisen as a result of cold, but through blood having collected in the veins in the ischial region. Hence phlebotomy from the ham is more effective than from the ankles in patients thus affected, and scarification brings them no obvious benefit.”<sup>204</sup>

5:24 **Saphenous vein:** *al-ṣāfīn*, i.e., *vena saphena*,<sup>205</sup> by which most likely the great saphenous vein, running along the inner side of the leg, is meant.<sup>206</sup>

... **makes the menstruation flow:** see commentary for §5:22 and §14:9. Specifically for the ankles, see Galen: “By evacuations from the legs, however, it is possible not only to revulse, but also to urge on the menses. When you

200 Galen, *Cur. Rat. Ven. Sect.*, p. 95.

201 Galen, *Meth. Med. 1*, IV, 276K (LCL 516: 418–419).

202 Albucasis, *Albucasis on Surgery and Instruments*, p. 652.

203 Fonahn, *Arabic and Latin Anatomical Terminology: Chiefly from the Middle Ages*, p. 76.

204 Galen, *Cur. Rat. Ven. Sect.*, pp. 93–94.

205 Fonahn, *Arabic and Latin Anatomical Terminology: Chiefly from the Middle Ages*, p. 130.

206 Netter, *Atlas of Human Anatomy*, plate 475.

wish to achieve this at the time when the woman's period is due, start about three or four days in advance by cutting a vein or scarifying the malleoli of one leg, and draw off a little blood; then on the next day evacuate in the same way from the other leg, at the same time prescribing a reducing diet for the days on which you evacuate thus, and in the four or five days preceding them."<sup>207</sup>

5:25 *Al-madaniyya*: i.e., Guinea worm. Cf. Ullmann, *Islamic medicine*: "Among the parasites, bilharziasis, intestinal roundworms, pineworms and Guinea worms (*al-'irq al-madani*) were the most common."<sup>208</sup> Ullmann's study reveals that Arab physicians consistently called this *al-'irq al-madani*, 'the Medinan vein' due to its prevalence in the area. Moreover, he cites 'Abdallāh ibn Yaḥyā, a ninth-century physician, who in his *Kitāb al-Iḥtiṣārāt* connected the Medinan vein to hot climates and the consumption of bad water.<sup>209</sup> For a full chapter on the treatment of Guinea worms, see Qusṭā ibn Lūqā's *Medical Regime for the Pilgrims to Mecca, The Risāla fī Tadbīr Safar al-Ḥaġġ*, edited with translation and commentary by Gerrit Bos (1992), and al-Rāzī, *Hāwī XI*, pp. 291–296.

6:2 **Danger in phlebotomising the pulsatile**: Galen: "Since, however, the arteries are hard to stanch, doctors do not dare to cut them, and where some, while performing phlebotomy, have inadvertently wounded an artery, they have had difficulty in stopping the haemorrhage. When they do the best they can, an aneurysm develops in the incision scar."<sup>210</sup>

**They are composed of two tunics, apart from the vein that nourishes the lungs**: Galen: "It is perfectly evident to everyone that an arterial vessel cannot possible [*sic*] be derived from a venous one; for a vein has one tunic, and that a thin one, whereas the tunic of an artery is neither single nor so thin. It has, in fact, two tunics. The inner one is exceedingly thick, dense, and hard, and is divisible into transverse fibers; the outer one is soft, fine, and loose-textured, like that of a vein."<sup>211</sup> Ms. Escorial reads "irrigates the lung", understood as a vein that nourishes the lung, bringing nutriment to it, and what is meant with it is *arteria pulmonalis*, cf. Galen: "the vein that nourishes the lung itself [a. pul-

<sup>207</sup> Galen, *Cur. Rat. Ven. Sect.*, p. 93.

<sup>208</sup> Ullmann, *Islamic Medicine*, p. 1.

<sup>209</sup> Ullmann, *Islamic Medicine*, p. 82.

<sup>210</sup> Galen, *Cur. Rat. Ven. Sect.*, p. 97.

<sup>211</sup> Galen, *UP*, Sixth Book, p. 304.

monalis].”<sup>212</sup> Galen: “Now when Nature, who is wise in all things, interchanged the tunics of the pulmonary vessels, making the vein [*a. pulmonalis*] like an artery and the artery [*v. pulmonalis*] like a vein, she was not acting in any idle or haphazard manner, any more than she ever does in making any other structure in any animal. Though an artery may be similar to a vein in all its other parts, in the thickness of its tunics it is not the same. On the contrary, it is so different that Herophilus seems to have calculated correctly when he declared that an artery is six times as thick as a vein. Of all the instruments and parts the lung is the only one in which the artery has the tunics of a vein and the vein those of an artery.”<sup>213</sup> There is a reason why the ancients thought the aforementioned; cf. Hankinson: “the ancients, lacking the concept of circulation of blood, confused the pulmonary veins with the pulmonary arteries, hence the problem of accounting for why they resembled veins rather than arteries in the first place.”<sup>214</sup>

**It was shown to him in his dream:** Galen: “Urged by certain dreams I had, two of which were particularly vivid, I went for the artery in the space between the index finger and thumb of the right hand, and allowed the blood to flow until it stopped of its own accord, as the dream commanded. Not quite a pound escaped. Forthwith a long-standing pain was relieved which had oppressed chiefly the part where the liver meets the diaphragm. This happened to me in my youth.”<sup>215</sup> As seen earlier, dreams were considered highly beneficial in diagnostics, and Galen followed this too: “Like most people, Galen believed that the gods spoke in dreams and he followed their commands.”<sup>216</sup>

**The pulsatile vein that is between the index finger and the thumb:** Possibly radial artery or one of the two dorsal metacarpal arteries that flow between the index finger and the thumb.<sup>217</sup>

**6:3 The best way of phlebotomising them ...:** Perhaps a continuation of an indirect Galenic quote that started in § 6:2. Galen: “Even if the artery is larger, however, it will also cicatrise without an aneurysm if it is cut completely

<sup>212</sup> Galen, *UP*, Sixth Book, p. 303.

<sup>213</sup> Galen, *UP*, Sixth Book, pp. 296–297.

<sup>214</sup> Hankinson, *Galen's Theory of Causation* in *ANRW II* 37:2 (1994), pp. 1757–1774, footnote 46.

<sup>215</sup> Galen, *Cur. Rat. Ven. Sect.*, p. 98.

<sup>216</sup> Mattern, *Prince of Medicine*, p. 38.

<sup>217</sup> Netter, *Atlas of Human Anatomy*, plate 459.

through, and this procedure also often prevents the danger of haemorrhage. It can be clearly seen that the whole artery is cut obliquely right through its whole substance, and the two parts are drawn up away from each other, the one above the site, the other below it. This also happens with veins, but only to a moderate degree, and always far more with arteries than with veins.”<sup>218</sup>

6:4 **Rub**: About rubbing, see Galen, *Hygiene*, Part II, 91K (LCL 535: 132–133 ff.).

6:9 **narrow**: Al-Rāzī, *Faṣd Alukah*, has similar content, yet instead of *ḍayyiqan*, it reads *ṣayfan*, ‘in the summer.’ However, like Ms. Escorial, Ms. Parma reads ‘narrow.’ See also commentary for § 3:7.

6:10 **Better**: Ms. Escorial: أكثر *akṭar*, ‘more’; Ms. Parma: יותר טוב *yoter tov*, ‘better.’

6:12 ... **and the like**: Galen: “You must draw off and evacuate by phlebotomy the blood carried to the liver, incising the inner vein in the right antecubital fossa, since this is on a level and connects by a wide channel with the so-called [inferior] vena cava. If this [vein] is not visible, cut the medial vein, and if this is not visible, the remaining third vein.”<sup>219</sup>

6:13 **It is a nerval vein**: Ms. Escorial reads *فإنه عرق عصبي fa-innahu ‘irq ‘aṣabī*, “it is a nerval vein”, perhaps meaning that it is a vein adjacent to a nerve. There indeed are nerves both under and on the basilic vein: medial brachial cutaneous nerve with all its branches, and intercostobrachial nerve.<sup>220</sup> Describing the basilic vein as *‘irq ‘aṣabī* appears also in al-Rāzī’s *Faṣd Alukah*, in which it is also mentioned that nerval veins can be identified by the touch under the finger.

6:14 **A fine scalpel that has a blade**: understood as a scalpel with a sharp blade.

**A scalpel with no blade**: understood as a scalpel that has a blunt blade, that does not cut. Perhaps a similar tool that is featured in § 6:12 as ‘hook.’ A variety of scalpels presented in Bliquez, *The Tools of Asclepius*, p. 72 ff.

<sup>218</sup> Galen, *Cur. Rat. Ven. Sect.*, p. 98.

<sup>219</sup> Galen, *Meth. Med. III*, XIII, 901K (LCL 518: 358–359).

<sup>220</sup> Netter, *Atlas of Human Anatomy*, plate 405.

6:16 **When I want it to heal quickly:** It is possible that the phrase “if I want it to heal quickly” is copied twice by mistake. The three manners of phlebotomy are present in al-Rāzī, *Kitāb al-Iklīl* as well: lengthwise as the most recommendable procedure; widthwise, possible for broad veins not overlying a nerve, very risky and requires caution; and crosswise, much less risky than cutting widthwise.<sup>221</sup>

**Nerve spreading:** Ms. Escorial reads *عصب مفروش* ‘*aṣab mafrūš*, translated as ‘expanded,’ cf. Dozy: “*se dilater, occuper un plus grand espace.*”<sup>222</sup>

6:17 **Hot compress:** Cf. Maimonides, *Aphorisms* 23: “[The term] “hot compress” applies to everything that warms the body externally. There are five kinds of it: moist, dry, biting, intermediate, and moderate.”<sup>223</sup>

**Be careful:** In contrast, Albucasis recommends the surgeon to wipe the scalpel with some olive oil.<sup>224</sup>

6:19 **لا مجاور:** this seems to be deleted from Ms. Escorial by the copyist. If it was included in the text, perhaps it could be read as ‘a mistake in [phlebotomising] it causes a chronic damage to several faraway nerves.’

6:21 **When the illness is not visible to the eye:** An invisible swelling could refer to inflammations (see entry below). It is also possible that the negation here is a mistake, thus the passage should be read ‘when the illness is visible to the eye,’ if a visible swelling is meant. Thus, it is worth looking at the term.

**The reason for that:** The Arabic word *علة*, ‘*illa*, can mean ‘cause,’ ‘reason,’ and ‘illness.’ Since Ms. Escorial uses another word for ‘cause,’ namely *سبب*, *sabab*, I have—in most cases—chosen to understand ‘*illa* as ‘illness.’ However, in this specific passage, ‘*illa* is understood as ‘reason,’ since there is a logical thought process going on. As to the term ‘cause,’ it seems that the words ‘cause’ and ‘disease’ for Galen are somewhat interchangeable, cf. Galen: “Thus at all events

221 Al-Rāzī, *Kitāb al-Iklīl*, p. 145 (f. 31<sup>a</sup>).

222 Dozy, *Supplément aux dictionnaires arabes*, p. 253.

223 Maimonides, *Aphorisms* 23, 33, p. 37 (In *Hippocratis De acutorum morborum [victu et] Galeni commentarius* 2.)

224 Albucasis, *Albucasis on Surgery and Instruments*, p. 642.

you will either say that the disease itself is the cause<sub>A</sub>, or if the damage to the activity is actually the disease<sub>E</sub>, the disposition which damages it will be the cause<sub>A</sub> of the disease.”<sup>225</sup> For more examples on this, see Galen, *Meth. Med. I*, book II (LCL 516).

7:4 **The one who led to this [conclusion] ...:** Corresponds to Galen, *Meth. Med. I*, in which Galen refers to Hippocrates in his work *On Wounds (Ulcers)*: “In every recent wound, other than in a body cavity, it is of benefit for blood to flow immediately from the wound more rather than less, for the wound itself and the surrounding parts become less inflamed. [...] Because of this, he was right to also add [the recommendation] to withdraw blood from chronic wounds. But if we have learned that from him in general—that is, when fluxes are beginning it is appropriate to draw them in the opposite direction, whereas when they are fixed in the affected part, it is appropriate to make the evacuation from the affected part itself, or those parts particularly close to it—we are now ready to draw a conclusion about the removal of blood. [This is that], in the beginning, it is appropriate to make the removal of blood from what is distant, but later from the wounded [parts] themselves.”<sup>226</sup>

**Deflection away from the affected site:** this is what is called revulsion or diversion. Galen: “Thus [the blood] is diverted to places nearby and is held back in places lying opposite—for example, diversion is through the nose for what is emptying out via the palate, while revulsion is downward, just as in fact for an emptying out via the anus, diversion is through the uterus whereas revulsion is upward.”<sup>227</sup> Brain uses the term ‘derivation’ instead of diversion: “If bleeding from the mouth is brought to an end by a haemorrhage from the nose, this is derivation, since the flow is diverted to a nearby part; but if the haemorrhage that stops it is from the lower part of the body it is revulsion, since the part to which the blood is attracted is far from the site of the haemorrhage.”<sup>228</sup>

7:5 **Many disagreements:** Understood as physicians have differing opinions on how this should be done.

225 Galen, *Meth. Med. Hankinson*, 1.7.1, p. 26—<sub>A</sub> stands for aition / aitia, <sub>E</sub> for energeia / energesthai / energēma (ibid., p. xii).

226 Galen, *Meth. Med. I*, IV, 293K–294K (LCL 516: 444–447).

227 Galen, *Meth. Med. II*, V, 16. (LCL 517: 16–17).

228 Brain, *Galen on Bloodletting*, pp. 129–130.

7:6 ... so that the matter is drawn correctly: استقامة على المادة kay *tataḡaddab al-mādda* 'alā istiḡāma, could also be understood as 'so that the matter is drawn in an upright position.'

7:8 **Leeches:** Albucasis: "Leeches are mostly used on those parts of the body to which application of cupping-vessels is impossible, either because of their smallness, such as the lips, the gums, and so on; or because the part is bare of flesh, like the finger, the nose, and so on."<sup>229</sup> Several kinds of leeches described by Indian authors in Sanskrit sources in Rhazes' *Comprehensive Book*.<sup>230</sup> As to the application of leeches, see *Albucasis on Surgery and Instruments*, chapter 97 'On the application of leeches.'<sup>231</sup>

7:9 **The drugs that are put in the nose:** Apparently al-Rāzī both treated the patient with these drugs, despite them being recognised as useless, and also phlebotomised her. It seems to be a general view that these drugs are of little worth. Galen: "When we do this, as you know, we invariably check the haemorrhage from the nostrils, in spite of having previously tried the drugs recommended in the literature for stuffing up the nose and rubbing on the forehead, and found them all ineffective."<sup>232</sup> A few prescriptions for drugs used for treating epistaxis are presented in the *index of prescriptions* in this book.

**The cephalic vein on both sides:** Corresponds to Galen: "You ought not to despise phlebotomy as a revulsive remedy, since you have often seen me, when there is a copious haemorrhage from the nostrils, making use of the remedy and stanching the flow forthwith. It is expedient, then, as you have seen, not to delay until the patient's strength has reached the last stages of collapse, but, when it appears that the appropriate amount has been evacuated, and the force of the rush of blood continues strong, to cut a vein at the elbow, in the right arm if the right nostril is bleeding, in the other side for the left one."<sup>233</sup> The same thought features even in Galen's *Meth. Med. II*: "If the patient is still not relieved, it is necessary to cut a vein in the antecubital fossa on the side of the hemorrhage, drawing off a little blood, and then, after an interval of one hour, drawing it again, then repeatedly, according to the capacity of the patient."<sup>234</sup>

229 Albucasis, *Albucasis on Surgery and Instruments*, p. 674.

230 Kahl, *The Sanskrit, Syriac and Persian Sources in the Comprehensive Book of Rhazes*, pp. 78–83.

231 Albucasis, *Albucasis on Surgery and Instruments*, p. 674.

232 Galen, *Cur. Rat. Ven. Sect.*, p. 84.

233 Galen, *Cur. Rat. Ven. Sect.*, p. 84.

234 Galen, *Meth. Med. II*, v, 316K (LCL 517: 16–19).

8:2 **The best time for extracting blood is the spring:** See commentary for § 1:2.

8:3 **Hot disposition... hurry up to phlebotomise him:** This logic may be related to what al-Rāzī, according to Ibn Abī Uṣaybiʿa, has said about hot illnesses: “Hot illnesses are deadlier than the cold ones due to the speed of the movement of fire.”<sup>235</sup>

8:4 **In its proper place:** i.e., chapters 10 and 11 in Ms. Escorial.

8:5 **Whoever is cautious:** understood as someone who is cautious about keeping a strict diet.

8:7 ... [**when a surplus of semen] has collected:** Most likely something is missing in this passage. Ms. Parma supports a different reading, as it says: וימנע מהמשגל רק בעת התשוקה החזקה כי הוא יתרון הזרע המקובץ ויציאתו יותר טובה מהנחתו הרבה, “One should abstain from sexual intercourse, except during strong desire, for the accumulation of semen is beneficial, and releasing it is better than its prolonged retention.” Allowing the semen to exit the body will bring relief, concisely concluded as “Comfort comes from ejaculation.”<sup>236</sup> Already Aristotle dealt with this matter: “Why are the melancholic highly sexual? Is it because they are full of *pneuma*, and the seed is an exiting of *pneuma*? Therefore, those in whom there is a lot of this material must necessarily often desire to purge themselves; for they are thereby relieved.”<sup>237</sup> The topic is discussed in Galen, *De locis affectis*.<sup>238</sup>

**Coitus:** For more on al-Rāzī on sex, see e.g., *The Spiritual Physick of Rhazes*, pp. 83–84; and Pormann, *Al-Rāzī (d. 925) on the Benefits of Sex: A Clinician Caught between Philosophy and Medicine*, in A. Vrolijk, & J.P. Hogendijk (Eds.), *O Ye Gentlemen: Arabic Studies on Science and Literary Culture, in Honour of Remke Kruk* (pp. 134–145), Brill.

**Hotter or colder than customary:** Qusṭā ibn Lūqā mentions that the parts can become hot or cold either due to the increase of hot or cold humours, or due to dyscrasia.<sup>239</sup>

235 Ibn Abī Uṣaybiʿa, *Ṭabaqāt*, p. 761, my translation.

236 Swain, *Social Stress and Political Pressure: On Melancholy in Context*, p. 120.

237 Aristotle, *Problems IV*, 30 (LCL 316: 172–173).

238 Galen, *De locis affectis*, Book VI, 417–421, pp. 184–185.

239 Qusṭā ibn Lūqā, *Kitāb fi l-Faṣd*, p. 299.

**Drunk:** “Drunken and intemperate people, however, accumulate an excess of undigested humours, and do not benefit from such treatment [i.e. venesection or purgation]; the physician should not undertake the management of such patients.”<sup>240</sup>

**Full of food:** Cf. Maimonides, *Aphorisms 12*: “Beware of letting blood while food is still present in the stomach and as long as the humors in the stomach and first [nonpulsatile] vessels are not [completely] cocted.”<sup>241</sup>

**Raw humours:** Cf. Maimonides, *Rules*: “If the body contains a very raw humor, do not even consider bleeding, lest the innate heat become too weak to concoct [the humor].”<sup>242</sup>

**8:8: Day or night:** Corresponds to Galen: “you will not shrink from sometimes opening a vein even during the night.”<sup>243</sup>

**8:9 If you see the blood black and slightly foamy:** Corresponds to Galen talking about quartan fevers: “And if, when you open a vein, the flow is black and thick, which is the kind of thing you find particularly in those who are splenic, be confident about the purging. However, if it appears yellow and thin, stop immediately.”<sup>244</sup>

**8:10 Hippocrates ... eighth day of his illness:** Corresponds to Hippocrates in *Epidemics III*, in which he talks about a patient with acute fever: “Eighth day. I bled him in the elbow. There was an abundant, proper flow of blood: the pains were relieved, although the dry coughing persisted.”<sup>245</sup>

**Galen says:** Corresponds to Galen: “For on whatever day you observe the indications for phlebotomy in the patient, on that day you will apply the remedy, even if it is the twentieth day from the onset. And what are the indications? The disease severe; strength of the faculties; except in the stage of childhood, and when the ambient air is very hot. Since, in most diseases, the patient’s strength will already have been diminished with the passage of time, the oppor-

240 Brain, *Galen on Bloodletting*, p. 132.

241 Maimonides, *Aphorisms 12*, 25, p. 34.

242 Maimonides, *Rules*, 23, p. 10.

243 Galen, *Cur. Rat. Ven. Sect.*, p. 86.

244 Galen, *Meth. Med. G.*, Book I, 12, 38K (LCL 523: 392–393).

245 Hippocrates, *Epidemics III*, 8 (LCL 147: 268–269).

tunity for phlebotomy is lost because of the number of days that have elapsed; this, however, is not a primary effect, but is due to the intervention of another factor, namely the antecedent dissolution of the faculties. Hence, if even on the second day after the onset the powers should appear to be dissolved, we shall refrain from phlebotomy.”<sup>246</sup>

9:2 **Whoever is phlebotomised ...:** The principles of epaphairesis confirmed by Galen: “As for the time for epaphairesis, in those patients in whom we decide simply to evacuate, this should take place on the same day; but for those who are revulsed, it is better that it should be done on two successive days. You should monitor the strength of the patient in all such cases, by feeling his pulse, since some patients are sensitive where strength is concerned, so that they cannot bear copious evacuation. In such cases, the patient should be allowed to recover on the first day, and epaphairesis should be performed on the second.”<sup>247</sup>

9:6 *Madīnat al-Salām*: مدينة السلام, a sobriquet for Baghdad.<sup>248</sup>

9:7 *Al-Ma'mūn*: Al-Ma'mūn, ‘Abdullāh bin Hārūn al-Rašīd (d. 833), who was an Abbasid Caliph.<sup>249</sup>

9:9 **Pulse:** Usually in this edition I have translated the word ضربة *darba*, as ‘blow,’ a physical affection, but in this case the word is understood as beat, i.e., heartbeat. How does Galen see physical affections? Galen: “Sometimes the term *helkos* (wound, ulcer) is used, sometimes *trauma* (wound, trauma), and sometimes *rhexis* (rupture). But what I have often said is that we must give little thought to names so that we may hasten to discover the knowledge of the matters themselves. Let us press toward this, paying scant attention to names because patients are benefited not by the precise application of names, but by the appropriate remedies.”<sup>250</sup>

10:2 **High ceiling:** The unclear Arabic word in Ms. Escorial looks like *السط*, understood as *نمط*, *namat*, ‘shape, form.’ Ms Parma reads *עליון התקרה* ‘*elion ha-tiqra*, ‘high ceiling.’ The expected Arabic words, *saqf* and *sath*, do not match the writing.

246 Galen, *Cur. Rat. Ven. Sect.*, p. 96.

247 Galen, *Cur. Rat. Ven. Sect.*, p. 97.

248 Wehr, *A Dictionary of Modern Written Arabic*, p. 496.

249 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 534.

250 Galen, *Meth. Med. II*, VI, 385K (LCL 517: 120–121).

**Fragrant herbs:** Cf. Albucasis: “There should also be in the place where he is sitting such things as are customary for men to enjoy, such as various perfumes, aromatics, and music, and the like, as each one may.”<sup>251</sup> In general, the atmosphere should be pleasant and relaxed, as discussed in chapter 95 in *Albucasis on Surgery and Instruments*.<sup>252</sup>

10:3 **Oxymel:** A syrup prepared of vinegar and honey or sugar, beneficial for its cooling effects.<sup>253</sup> For its uses, see e.g., Hippocrates, *Regimen in Acute Diseases* (LCL 148), LVIII. ff. (p. 112 ff.). For more, see list of prescriptions and index of *materia medica*.

**Julep:** A syrup prepared of rose water and sugar or honey, served as a refreshing drink either diluted in water or served on ice, known for its cooling effects.<sup>254</sup> For more, see list of prescriptions and index of *materia medica*.

**Soft-boiled eggs:** The Arabic term for soft-cooked eggs is *al-bayḍ al-nūmba-rišt*.<sup>255</sup> According to Galen, soft-boiled eggs provide the best nutriment to the body, compared to other means of preparation.<sup>256</sup>

**The food should consist of dishes made from goat, mutton, or soured pullets:** Galen regards the meat of both goats and sheep as unwholesome due to the humours and residues they produce, but, when they grow up eating food from the soil or trees, they become more suitable for human consumption. Hence, sheep are the best during early and mid-spring, and goats in the early and mid-summer. Galen sees pork meat as the superior, most nutritious of all foods.<sup>257</sup> It is understandable that pork is not included in Ms. Escorial due to the influence of Islam. As to pullets, al-Isrāʿīlī states that their meat is the finest among domesticated birds, as it is compatible with all temperaments, digests quickly, and generates good humours.<sup>258</sup> However, Galen regards all winged animals as poorly nutritious, especially when compared to pigs, yet their meat is easier to

251 Albucasis, *Albucasis on Surgery and Instruments*, p. 642.

252 Albucasis, *Albucasis on Surgery and Instruments*, p. 642.

253 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 555.

254 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 552.

255 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 830.

256 Galen, *Alim. Fac.*, III:21 (p. 134).

257 Galen, *Alim. Fac.*, III:1 (pp. 114–115).

258 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 724.

concoct.<sup>259</sup> For more on the meat of terrestrial animals, see Galen, *Alim. Fac.*, III, entries 1–13 (pp. 114–123).

*Sikbāğ*, *hişrimiyya*, *rummāniyya*, *zīrbāğ*, and *isfidbāğ*: The dishes mentioned in this paragraph are all sour. Sour stews are generally considered appropriate for people with hot temperaments, while those who have a cold temperament are recommended to consume white, simple stews, such as *isfidbāğ*, and desserts prepared with honey after consuming sour stews, in order to balance their cold properties.<sup>260</sup> *Sikbāğ* is a stew mainly cooked with beef, soured with vinegar;<sup>261</sup> *hişrimiyya* a stew that is soured with juice of unripe grapes;<sup>262</sup> *rummāniyya* a stew made of pomegranate and chicken;<sup>263</sup> *zīrbāğ* a delicate stew made of birds, lightly seasoned, and soured with vinegar and balanced with sugar, praised by many for its perfectly balanced properties;<sup>264</sup> and *isfidbāğ* a white dish, notorious for being a balanced dish fit for all.<sup>265</sup>

10:5 **Melicratum**: Cf. Riddle, *Dio. Pharm. Med.*: “Very popular as a drink and as a medicine in antiquity was melicraton, or water mead (V. 9). This was a mixture of honey and water allowed to ferment. Among its usages was one for coughs.”<sup>266</sup> It is synonymous to hydromel, a mixture of honey and water.<sup>267</sup> For Hippocrates on hydromel, see Hippocrates, *Regimen in Acute Diseases* (LCL 148), LIII. ff. (p. 108ff.).

10:6 **Animal faculty**: One of the three central faculties. “There are three basic faculties: 1) the natural faculties (*al-quwā at-tabīʿiyya*) are the effects of nature which manifest themselves in conception, growth and nourishment; 2) the animal faculties (*al-quwā al-hayawāniyya*) ensure life; they manifest themselves in the systole and diastole of the heart and arteries; 3) the psychical faculties determine the reason, the power of discernment, emotion and voluntary movement.”<sup>268</sup>

259 Galen, *Alim. Fac.*, III:18 (pp. 131–132).

260 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 607.

261 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 617.

262 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 607.

263 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 614.

264 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 620.

265 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 608.

266 Riddle, *Dio. Pharm. Med.*, p. 144.

267 Montanari, *The Brill Dictionary of Ancient Greek*, p. 1305.

268 Ullmann, *Islamic Medicine*, p. 60.

**A humour has flowed into the stomach:** This seems to be what Galen calls *dyskrasia* of the stomach, and its treatment is discussed in detail for example in Galen, *Meth. Med. II, VII*, Chapters 8–10, 503K–511K (LCL 517: 306–317).

10:11 **But if not:** Treatment with fragrances and musical instruments, that are used to strengthen the animal faculty, are described in detail in Maimonides, *On the Regimen of Health*.<sup>269</sup>

**Ġāliya:** A men's perfume that comes in various types, the basic components of which are musk, ambergris, and balsam oil.<sup>270</sup> For its preparation, see al-Kindī, *Kitāb kimiya al-ʿiṭr wat-taṣʿidāt*, pp. 56–57.

**Mudaqqaqāt, ṭabāhiġāt, muṭaġġanāt, laqāniq:** *Mudaqqaqāt* is spicy, ground meat cooked into casserole-like dishes;<sup>271</sup> *ṭabāhiġāt*, a dish made of red meat, seasoned with spices and herbs;<sup>272</sup> *muṭaġġanāt*, dish made of poultry, seasoned with spices and herbs;<sup>273</sup> and *laqāniq*, small, spicy sausages.<sup>274</sup>

**Spices:** The Arabic term بزور *buzūr*, in singular *bizr*, can stand for seed, or even oil made of seeds,<sup>275</sup> alternatively spices.<sup>276</sup> In the context of this passage, most likely spices are meant.

10:9 **Iron pot:** Ms. Escorial reads قدر جديد *qidr ġadīd*. What possibly is meant is *qidr ḥadīd* (قدر حديد), an iron pot, in which case the gender of the noun would match too. However, in the following passage, Ms. Escorial reads قدر نظيفة جديدة *qidr nazīfa ġadīda*, a clean, new pot.

10:10 **Grape jelly:** The Arabic term, *ʿaqīd al-ʿinab*, is most likely an arabicised version of what Galen refers to as ‘inpissated must’ or ‘grape jelly’.<sup>277</sup>

269 Maimonides, *RH*, p. 84.

270 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 770.

271 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 611.

272 Nasrallah, *Annals of the Caliphs' Kitchens*, pp. 617–618.

273 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 612.

274 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 610.

275 Ibn Ġanāḥ I, p. 338.

276 Dozy, *Supplément aux dictionnaires arabes*, p. 81.

277 Ibn Ġanāḥ I, no. 566 (p. 429). The Arabic word *ʿaqīd* stands for a beverage prepared by evaporating the serous part of milk; the residue is formed into cakes or pieces with the hand, and spread on a horsehair sack to dry (Dozy, *Supplément aux dictionnaires arabes*, p. 151).

11:1 **Foods:** In general, al-Rāzī reckons the role of food and diet important. He said: “If a wise man is able to treat [a patient] with foods, without drugs, he achieves bliss.”<sup>278</sup>

11:2 **Fatigue:** Cf. Maimonides, *Rules*: “When the body of the patient is weak, when he suffers from indigestion, or when his body contains a crude humor that has not concocted, one should not bleed [that patient].”<sup>279</sup>

11:3 **Qūqāyā pill:** In *Meth. Med. II*, Galen describes this as “our own little pills compounded from aloes, scammony, colocynth, agaric, bdellium and gum arabic”,<sup>280</sup> while in *Meth. Med. III*, where the story of the man with the swollen tongue can be found as well, Galen refers to “the customary little pills which I compound from aloes, scammony and colocynth”.<sup>281</sup> For a full prescription, see the *index of prescriptions*.

... thus, I purged him with a *qūqāyā* pill in the evening: According to Galen himself, he advised to use a cooling agent as the first measure, while purgative pills (in Ms. Escorial: a *qūqāyā* pill) given towards the evening was a secondary measure, but the other physician wanted to use purgative pills instead. Galen’s preferred treatment was later supported by a dream that the other physician had, and the patient was successfully treated with lettuce juice. Cf. Galen:

I have in fact seen a tongue so swollen that it could not be contained in the mouth of the person—someone aged sixty who had never been phlebotomized. It was almost the tenth hour of the day when I first saw him, and he seemed to me to be someone who must be purged with the customary little pills which I compound from aloes, scammony and colocynth, the medication being given toward evening. However, I advised that one of the cooling [agents] be placed on the affected part itself as the first measure. Later, I said, we will adapt according to what happens. But to one of the doctors this did not seem good and because of this, the patient took some of the little pills. Consideration of the topical medication was put off to the next day when he hoped something which was tried might be effective after prior evacuation of the whole body and a revulsion down-

278 Ibn Abī Uṣaybī‘a, *Ṭabaqāt*, p. 774, my translation.

279 Maimonides, *Rules*, 38, p. 17.

280 Galen, *Meth. Med. II*, v, 15, 374K (LCL 517: 104–105).

281 Galen, *Meth. Med. III*, XIV, 8, 971K (LCL 518: 464–465).

ward had occurred. However, during the night, a very clear dream appeared to him, which approved my advice and determined the material of the medication, ordering a thorough washing with the juice of lettuce. And certainly, when he used this alone, the man benefited completely so as to no longer need anything else.<sup>282</sup>

Misunderstanding may also be caused by Galen's verbosity and long-windedness; that, combined with the depth of the thought and uncertainty of the text, may have led to misinterpretations.<sup>283</sup> Being criticised for his verbosity, Galen seemingly replied by writing: "I should not be accused of the fact that my lectures are too long. It is the fault of those who write books full of erroneous arguments."<sup>284</sup>

11:4 **Sucking the honey-like, glossy pod of cassia fistula:** Ms. Escorial reads *امتصاص فلولس الخيارشبر العسلي البراق*, *imtišāš fulūs al-ḥiyāršanbar al-ʿasalī al-barrāq*, lit. 'sucking the honey-coloured, glossy coins/scales of cassia fistula.' According to Alam (1990), the Arabic term *folūs* refers to thin, woody partitions of the pod. The term *folūs*, from *folūs-e ḥiyār(-e) čanbar*, 'the septa of the cassia fistula' has replaced the term for cassia fistula in Persian. *Folūs* can even mean the pod of cassia fistula, and *maǧz-e folūs* 'the pith of *folūs*,' meaning the pulp. Alam also mentions that a cassia fistula with a thinner peel, with a thick, dark and glossy pod has the best medical properties.<sup>285</sup> It could also be that the cassia fistula should be soaked in one of the previously mentioned syrups.

11:5 **Muzawwarāt:** vegetarian dishes, lighter than meat dishes and easier to digest.<sup>286</sup> The dishes listed here, *ʿadasiyya*, *ḥiṣrimīyya*, *summāqīyya*, and *rum-mānīyya*, are known as dishes containing meat. As we are talking about *muzawwarāt*, vegetarian dishes, most likely these are vegetarian versions of the dishes known as dishes with meat. With *sikbāǧ*, that also is a dish containing beef, this is evident, as Ms. Escorial reads "of fresh fish the small prepared as *sikbāǧ*."

282 Galen, *Meth. Med.* III, XIV, 8. 971K–972K (LCL 518: 462–465).

283 Temkin, *Galenism*, p. 67.

284 Siegel, *Galen's System of Physiology and Medicine*, p. 11.

285 Alam, Houshang, 'Cassia', in *Encyclopædia Iranica*, <https://iranicaonline.org/articles/cassia-a-a-genus-of-shrubs-and-trees-of-the-family-leguminosae>, accessed on June 22nd, 2022.

286 Nasrallah, *Annals of the Caliphs' Kitchens*, p. 433.

**Sandalwood and rose water:** Sandalwood and roses appear as common ingredients in poultices for liver and spleen in al-Kindī, *Aqrābādīn*.<sup>287</sup>

11:7 **Tamarind:** Maimonides in *On the Regimen of Health*: “Abū Marwān ibn Zuhr—may God have mercy with him—has said that the best thing for softening the stools is an infusion of rhubarb with tamarind.”<sup>288</sup> As to rhubarb, see commentary for § 11:12.

**Half a *raṭl* of clear water:** The prescription does not mention more than half a *raṭl* of water as a part of the decoction. Most likely the ingredients should be cooked in a larger amount of water as the water is supposed to turn red and the decoction thicker before adding the additional half a *raṭl* of water.

11:8 **Pith of cassia fistula:** Ms. Escorial reads لب خيارشنبر فارسي قصبی *lubb ḥiyāršanbar fārisī qaṣabī*, ‘stalky kernel of Persian cassia fistula.’ Possibly the author, or al-Rāzī while dictating, has simply added that *ḥiyāršanbar* is a Persian name, as the Arabic term is derived from the Persian *ḥiyār-čanbar*: *ḥiyār*, ‘cucumber,’ and *čanbar*, ‘circle,’ ‘collar,’ ‘necklace,’ since, according to Alam (1990), the plant does not grow in Persia.<sup>289</sup> See also commentary for § 11:4.

11:9 **Barley broth cooked with peeled lentils:** Galen: “barley is not only far from warming (such as some foods are betwixt warming and cooling, such as starch and light bread) but it actually seems to be cooling in every way it is used.”<sup>290</sup> As to lentils cooked with barley, Galen says it is best to mix lentils with less ptisane (i.e., barley gruel) for the best result.<sup>291</sup>

11:10 **The prescription of barley broth:** The prescription of barley broth, as it appears in the manuscript, seems to be incomplete. For a suggestion of a prescription of barley broth, see the *index of prescriptions*.

11:11 **Seedless raisins:** could refer to *kišmiš*, a variety of seedless raisins (or grapes).<sup>292</sup>

287 Al-Kindī, *Aqrābādīn*.

288 Maimonides, *RH*, p. 88.

289 Alam, Houshang, ‘Cassia’, in *Encyclopædia Iranica*, <https://iranicaonline.org/articles/cassia-a-genus-of-shrubs-and-trees-of-the-family-leguminosae>, accessed on June 22nd, 2022.

290 Galen, *Alim. Fac.*, I, 9, 501 (p. 47).

291 Galen, *Alim. Fac.*, I, 18, 526–527, (p. 58).

292 Ibn Ġanāḥ I, 488 (p. 368).

11:12 **Chinese rhubarb:** Chinese rhubarb, *Da huang*, has been used in Chinese medicine for over two thousand years. It was first documented around 200 A.D.. Through trade it reached the rest of the world, and herbalists in Europe recommended it for gastrointestinal issues, in large doses as a laxative, and small doses for diarrhoea. Thus, it was used both as a laxative and as a diuretic. It was also used to treat liver diseases, kidney stones, and gout. Three varieties of the species, *Rheum officinale*, *Rheum palmatum*, and *Rheum tanguticum*, are still widely cultivated and used as medicinal plants in China. It is a powerful, yet mild laxative that evacuates the intestines and purges the bowels efficiently. As the leaves are poisonous, the roots and the stalks are consumed.<sup>293</sup> The rhubarb root, Radix et Rhizoma Rhei, is among the earliest and most recognised Chinese herbal medicines.<sup>294</sup>

12:1 **Illnesses:** For how several of these illnesses are created, and for their treatment through means other than phlebotomy, see *Zād al-musāfir wa-qūt al-hādir* by Ibn al-Ğazzār.

12:3 **Phlebotomising the frontal vein** Galen: “Similarly when a vein in the forehead is cut, heaviness of the head and pains that have become chronic as a result of plethos are usually relieved.”<sup>295</sup>

12:3 **Callous hardenings of the face:** النخيلات *al-naḫīlāt*, ‘callous hardenings on the face.’<sup>296</sup>

**Polyps:** See commentary for § 5:10.

12:4 **Phlebotomising the cephalic vein and its benefits:**

**Eyes:** Galen: “When the eyes are affected, cutting the vein called the humeral, or the one branching from it at the elbow, quickly brings clear benefit.”<sup>297</sup> For Galen, the humeral vein is the cephalic vein.<sup>298</sup>

293 Clementi & Misiti, *Potential Health Benefits of Rhubarb*, pp. 407–423.

294 Tang & Eisenbrand, *Chinese Drugs of Plant Origin*, p. 855.

295 Galen, *Cur. Rat. Ven. Sect.*, p. 94.

296 Maimonides, *Aphorisms* 23, 72, p. 55.

297 Galen, *Cur. Rat. Ven. Sect.*, p. 90.

298 Galen, *Cur. Rat. Ven. Sect.*, p. 91, footnote 69.

**Throat:** Galen: “Parts in the region of the throat and trachea which are much inflamed are greatly benefited at the beginning by venesection at the elbow, but after the beginning by letting blood from the tongue; both the veins in it are cut.”<sup>299</sup>

⟨**the eye combined with pain, throbbing pain and itching**⟩: This part is written in the margin. Where it belongs is not marked in the Ms., but it is likely to be a description of *qurūḥ al-‘ayn al-mutašaqiqā*.

**Ptilosis:** Cf. Maimonides, *Aphorisms* 23: “The eyelids that become thick and hard and whose color turns red and whose hairs fall off is an illness that is called *sulāq* [ptilosis].”<sup>300</sup> The term features in Galen’s *Meth. Med. III* as *ptili*, which, according to Galen, “destroy the eyelashes”.<sup>301</sup>

**Lining of the mouth:** Ms. Escorial reads literally ‘interior oblong covering,’ الغشاء المستطيل المستبطن *al-ġiṣā’ al-mustaṭīl al-mustabṭīn*. Possible emendation marks above the word *al-mustaṭīl*.

**Prolapse of the uvula:** Cf. Maimonides, *Aphorisms* 15: “The uvula can be affected by the illness of extreme relaxation without an inflammation, in which case we generally cut it off. But when the uvula is affected by this illness, remedies that heat and that cleanse the phlegm are really beneficial for it, because, at that time, the uvula mostly tends to turn white, as if it were lacking blood.”<sup>302</sup>

12:5 **Pleurisy:** ذات الجنب *dāt al-ġanb*, sometimes only الجنب *al-ġanb*, is pleurisy, “a severe disease, being an inflammatory tumour in the [pleura, or] membrane within the ribs”.<sup>303</sup>

**Pleuritis:** الشوصة *al-šawṣa*. Synonymous to *barsam*, which is a swelling inside the ribs.<sup>304</sup>

299 Galen, *Cur. Rat. Ven. Sect.*, p. 94.

300 Maimonides, *Aphorisms* 23, 71, p. 55.

301 Galen, *Meth. Med. III, XIV*, 1017K (LCL 518: 532–533).

302 Maimonides, *Aphorisms* 15, 27, pp. 61–62.

303 Lane, *An Arabic-English Lexicon*, p. 465.

304 Kahl, *The Sanskrit, Syriac and Persian Sources in the Comprehensive Book of Rhazes*, p. 208.

### 12:6 Phlebotomising the basilic vein:

**Fleshy-dropsy:** The term in Ms. Escorial is *istisqā' laḥmī*. *Istisqā'* is one of the Arabic translations of the Greek word for dropsy, ὕδρωψ, that is a general term for oedemas and accumulations of fluids in the belly.<sup>305</sup>

**Haemorrhoids:** Galen: "If you have recourse to phlebotomy because of suppression of a haemorrhoid, and wish to restrain the bleeding further, you should cut the veins in the arms; but to urge it on, those in the legs."<sup>306</sup>

**Melancholy:** the term for melancholy, in Greek μελαγχολία,<sup>307</sup> signifies "a condition due to an excess amount of black bile".<sup>308</sup> The term features in Ms. Escorial as مالنخونيا *mālinḥūniyā*, instead of the more expected مالنخوليا *māl-inḥūliyā*, throughout the manuscript. According to Dozy they both are attested forms,<sup>309</sup> and thus, the spelling is not altered in this edition.

**Colic:** In the era of al-Rāzī, colic signified abdominal pain arising from intestinal obstruction.<sup>310</sup> According to Ibn Sīnā, it is a disease that causes abnormal retention in the large intestine.<sup>311</sup>

**Ileus, which means 'Lord, have mercy':** Ms. Escorial states that ileus (*ilāwus*), in Greek εἰλέος, signifies '*rabbi irḥam*,' 'Lord, have mercy,' which corresponds to what he states in *al-Taqsīm wa-l-Tašjīr*.<sup>312</sup> According to Ibn Sīnā, ileus means *al-musta'ād bi-Allāh minhu*.<sup>313</sup> According to the editors of Ibn Ḡanāḥ, it has been defined as 'that from which one seeks protection,' by Hippocrates, and as 'stinking colic' that causes its sufferer to vomit faeces, by al-Rāzī.<sup>314</sup> Cf. Ibn Ḡanāḥ: "The author of this explanation erroneously assumed that the term is derived from the verb ἐλεέω 'to show mercy'. In fact it originates from another verb, namely εἰλέω 'to shut it'."<sup>315</sup> Maimonides, *Aphorisms* 23: "If the small intest-

305 Ibn Ḡanāḥ, I, no. 402, p. 570.

306 Galen, *Cur. Rat. Ven. Sect.*, pp. 94–95.

307 Montanari, *The Brill Dictionary of Ancient Greek*, p. 1300.

308 Brain, *Galen on Bloodletting*, p. 179.

309 Dozy, *Supplément aux dictionnaires arabes*, p. 565.

310 Al-Rāzī, *Kitāb al-Qawlanġ*, p. 14.

311 Ibn Sīnā, *Risāla fī l-Qawlanġ*, p. 157.

312 Ibn Ḡanāḥ I, no. 98, p. 294.

313 Ibn Sīnā, *Risāla fī l-Qawlanġ*, p. 157.

314 Ibn Ḡanāḥ I, no. 98, p. 295.

315 Ibn Ḡanāḥ I, no. 98, p. 295.

ines are affected by a hard tumor or by a severe obstruction of feces so that the patient vomits his feces, that illness is called “ileus”, and hardly anyone can be saved from it.”<sup>316</sup> The case features even in Galen, *Nat. Fac.*: “And when the animal becomes sick, this means that the stomach is striving to be evacuated by vomiting. And the expulsive faculty has in it so violent and forcible an element that in cases of ileus [volvulus], when the lower exit is completely closed, vomiting of faeces occurs.”<sup>317</sup> For more on ileus, see, e.g., Buḥtīšū’ in Kahl, *The Sanskrit, Syriac and Persian Sources in the Comprehensive Book of Rhazes*, p. 191 ff., and Maimonides, *Aphorisms* 23, 93, p. 63.

**Gout:** Ms. Escorial reads that gout appears especially in the joints of a man *مفاصل الرجل في* *fi mafāṣil al-raǧul*. Statement supported by al-Rāzī himself in his *Maqāla fi l-Naqras* (‘Treatise on Gout’), in which he explains that women do not suffer from gout since their excess blood is discharged during menstruation instead of flowing to the feet, and their disposition is naturally moist and thus, the blood will not turn to the sort that would cause gout.<sup>318</sup> As to phlebotomising for gout, in this treatise al-Rāzī suggests phlebotomising the median cubital vein “provided it is wide and thin-walled; otherwise, blood may be let through the basilic vein.”<sup>319</sup>

**Varicose veins:** Ms. Escorial offers the word *حمالين* *ḥammālīn*, ‘carriers’ or ‘porters.’ It is also possible that the word pregnant, *حامل* *ḥāmīl*, is intended.

**Elephantiasis:** It is worth discussing the terms ‘leprosy’ and ‘elephantiasis.’ Ullmann defines the term *الجذام* *al-ǧudām* as both leprosy and elephantiasis,<sup>320</sup> yet Ms. Escorial also includes a term that more specifically refers to elephantiasis, namely *داء الفيل* *dā’ al-fīl*, i.e., ‘elephant illness.’ According to Johnston (2006) the term ‘elephantiasis’ in the Antiquities was not used in the modern sense, but possibly for leprosy,<sup>321</sup> and presents the term ‘alphos’ a “dull-white leprosy, esp. on the face”<sup>322</sup> that does not correspond to leprosy as today, but as a skin disease causing the loss of pigmentation.<sup>323</sup> Since the Arabic term *ǧudām*

316 Maimonides, *Aphorisms* 23, p. 63.

317 Galen, *Nat. Fac.*, III. XIII, 193 (LCL 71: 299).

318 Rhazes, *Naqras*, p. 20.

319 Rhazes, *Naqras*, p. 35.

320 Ullmann, *Islamic Medicine*, p. 88.

321 Galen, *Dis.*, p. 54.

322 Galen, *Dis.*, p. 50.

323 Galen, *Dis.*, pp. 50–51.

for 'leprosy' features in the manuscript in the context of illnesses that occur in the head, it is likely that it refers to the aforementioned condition. Galen mentions *lepra*, i.e., "leprosy which makes the skin scaly [...] a skin disease characterized by eruptions and loss of skin pigmentation."<sup>324</sup> As to elephantiasis, Ms. Escorial specifies that it is an illness that causes the skin pigmentation to change and the lower body parts to become enormous, which could suggest the more modern idea of the illness today known by this name. Cf. Galen:

When I speak of opposites to those things mentioned, I refer to the liver being adapted to the generation of such a superfluity, a diet consisting of those foods which by nature generate blood that is thick and muddy, and a spleen that is weaker in nature and more unable to draw all that is generated to itself. In such a body, the blood becomes turbid and thickened in the veins. But sometimes the veins themselves are provided with a separative capacity for getting rid of what is abnormal, just as all other parts are, and pour this humor out through hemorrhoids. Often it rushes down to dilated (varicose) veins and is sometimes thrust toward the skin as a whole. This is the genesis of the affection people call *elephas/elephantiasis*.<sup>325</sup>

In *Meth. Med. G*, Galen recommends purging the melancholic humour and phlebotomy for treating elephantiasis;<sup>326</sup> and Iṣlimūn notes: "Useful against elephantiasis is to bleed the (small) saphenous vein in both shanks, and to keep shaking off (matter) by (using) that which purges the black bile."<sup>327</sup>

**12:7 Galen phlebotomised in putrid blood fever...:** In *Meth. Med. III*, Galen talks about "evacuating the abundance"<sup>328</sup> in order to cure the fever and stop the putrefaction. He also says: "It is best, then, as I said, to open a vein, not only in the continuous fevers but also in all the other fevers due to putrefaction of humors, at least whenever the factors of age and capacity do not prevent this."<sup>329</sup>

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324 Galen, *Dis.*, p. 56.

325 Galen, *Meth. Med. G*, Book II, 140K (LCL 523: 550–551).

326 Galen, *Meth. Med. G*, 12 (LCL 523: 335).

327 Kahl, *The Sanskrit, Syriac and Persian Sources in the Comprehensive Book of Rhazes*, p. 169.

328 Galen, *Meth. Med. III, XI*, chapter 10 (LCL 518).

329 Galen, *Meth. Med. III, XI*, chapter 15, 785K (LCL 518).

**Bad smell of urine:** Hippocrates: “If the urine contain blood, pus and scales, and its odour be strong, it means ulceration of the bladder.”<sup>330</sup> See also commentary for § 3:3.

**Small particles in the urine:** Ms. Escorial reads something that looks like بوره which could be بثوره ‘its pustules, pustules in it,’ yet the word نثرة *natra*, ‘tiny particle’ is more likely to be meant.

**Lassitude:** Ms. Escorial offers an uncertain reading of فورة, in this case understood as فتور *futūr*, lassitude: “In patients suffering from lassitude, says Galen, there is not much good blood, but an abundance of crude or uncocted humours; if peripheral blood is taken away by venesection, it will only be replaced by worse blood spreading outwards from the first veins to take its place.”<sup>331</sup>

12:9 **Phlebotomising the popliteal fossa and the saphenous vein:** Galen: “You should always evacuate women who suffer from suppression of the menses from the legs, either by opening a vein or by scarifying.”<sup>332</sup>

13:2 & 13:3 **Galen’s preparation:** This prescription and the instructions of its usage correspond to Galen in *Meth. Med. II*. Galen:

the best of all the medications I know, and the one which is safer to use for hemorrhages from the meninges, is the one I shall speak of. Mix one part of frankincense with half a part of aloes, and then, when it comes to the time for use, mix in the white of an egg to such a degree that the whole has a honeylike consistency. Next, let this be taken up by the softest hairs of a hare, and then let it be applied in abundance to the vessel and to the whole wound. Bind externally with a linen cloth in an underbandage, making the first four or five turns on the hemorrhaging vein itself, and from that point, distribute it to the root of the vessel in those parts where it is possible to distribute to the root, which is almost all parts except for the meninges. Then, when you release it on the third day, if the medication is still adhering safely to the wound, apply another encircling bandage, moistening the tampon from the hairs, as you bound it initially. If the first tampon should fall

330 Hippocrates, *Aphorisms* IV, LXXXI (LCL 150: 156–157).

331 Brain, *Galen on Bloodletting*, p. 123.

332 Galen, *Cur. Rat. Ven. Sect.*, p. 83.

off spontaneously, gently compress the root of the vessel with your finger until there is no further flow, then remove your finger carefully and apply another tampon.<sup>333</sup>

See also Maimonides, *Rules*:

If you want to stop a hemorrhage, you should first of all put a medicine on it that stops the bleeding; then apply a bandage and observe: if it still bleeds a little bit, you should not untie the bandage; but if it bleeds a lot, you should untie the first bandage and repeat this procedure after you let the patient rest for a little while. You should leave on the bandage until the third day, then untie it gently, and if you find the medicine [still] adhering to the wound, you should add [some more medicine] to it and put a [new] bandage on it. And if you find that [the wound] has healed, you should remove it [the bandage] gently and do the same thing again.<sup>334</sup>

**More aloe for the bodies that are dominated by dryness:** Galen in *Meth. Med. II*: “Obviously, we must apply aloes more to hard bodies”.<sup>335</sup>

**Processed cotton:** Ms. Escorial reads قطن لين مدبر, understood as processed cotton. What most probably is meant is what Galen above has stated, i.e., a linen cloth in an underbandage.

13:4 **And if he develops fever:** This could be understood in two ways: either as ‘if he [i.e., the patient] develops a fever,’ alternatively as ‘if it [i.e., the phlebotomised site] becomes warm.’ The first reading is deemed more plausible, suggested in Ms. Parma: “נתחדשה בו קדחת או שנפחד מזה יזה עליו פעם אחר פעם עם מי ורודים”, “ולא יתיר”, “If the patient develops fever, or if one is afraid that it could happen, one sprinkles rose water time after time on it [i.e., the wound], and does not untie it.”

13:5 **Burned chalcitis:** According to Galen, chalcitis is a very strong medication to cicatrise wounds.<sup>336</sup> For more on the topic of healing wounds, see Galen, *Meth. Med. III* and *IV*.

333 Galen, *Meth. Med. II*, v, 320K–321K (LCL: 517: 22–25).

334 Maimonides, *Rules*, 75, p. 28.

335 Galen, *Meth. Med. II*, v, 322K (LCL 517: 26–27).

336 Galen, *Meth. Med. I*, III (LCL 516: 304–305).

**Its prescription:** In al-Rāzī's work on alchemy, *Kitāb al-Asrār*, the prescription is as follows: "You take vitriol, purify it, add the liquid of a distilled egg yolk in the amount of a quarter of the vitriol and let it solidify."<sup>337</sup>

**The three vitriols:** In Ms. Escorial al-Rāzī states that there are three vitriols. In his book on alchemy, al-Rāzī lists five vitriols: black, white, yellow, red, and green vitriol.<sup>338</sup> For producing vitriols artificially, see al-Rāzī, *Asrār*, pp. 107–108.

13:8 **Roman earth:** Another name for *terra sigillata*.<sup>339</sup>

**Red and white sandalwood:** The term صندلین *ṣandalayn* can be understood as a designation for the two common types of sandalwood, i.e., red sandalwood and white sandalwood, as they often are mentioned side by side.<sup>340</sup>

14:2 **The lateral parts of the neck:** Fonahn defines the term الأخدعان *al-aḥḍaʿān* as 'the lateral parts of the neck.'<sup>341</sup>

14:3 **Cupping takes the blood from small veins:** Cf. Qusṭā ibn Lūqā, *Numbness*: "by cupping, the blood is extracted from narrow, invisible passages."<sup>342</sup>

14:5 **It relieves the head:** possibly what is meant is that cupping relieves the pain in the head and the other mentioned parts. Galen: "use a cupping glass affixed to the occiput to drive [the blood] back."<sup>343</sup>

14:9 ... **it also makes the menstruation flow:** Galen: "You know that I have the same opinion concerning women whose menstrual purgation has been suppressed. Evacuation should not be deferred in these patients either; it is not essential, however, to open a vein, for in fact scarifications of the ankles are sufficient to eliminate the excess, since they possess some other power to urge on the menstrual changes, just as venesections at the ankles and hams do. You should always evacuate women who suffer from suppression of the menses

337 Al-Rāzī, *Asrār*, p. 108.

338 Al-Rāzī, *Asrār*, p. 102.

339 Käs, *Mineralien II*, pp. 845–847.

340 Schmucker, *Firdaws*, no. 461.

341 Fonahn, *Arabic and Latin Anatomical Terminology: Chiefly from the Middle Ages*, p. 6.

342 Qusṭā ibn Lūqā, *Numbness*, p. 59.

343 Galen, *Meth. Med. II*, v, 332K (LCL 517: 40–41).

from the legs, either by opening a vein or by scarifying.”<sup>344</sup> In *Meth. Med. II, XIII*, Galen writes: “And if we wish to set in motion the menstrual flow, we place the cupping glass on the pubes and the inguinal glands.”<sup>345</sup>

**For women ...:** Ms. Escorial reads: “whoever is of the women, the appearance of her face is beautiful, and her colour is white”. Qusṭā ibn Lūqā also refers to women in similar words: “who was of women, her colour white.”<sup>346</sup> This, according to Galen, is because “Those of them who are of fairer complexion collect thinner blood, and hence derive the greatest benefit from scarification at the ankles. But treat those who are darker by phlebotomy, since they accumulate thicker and more melancholic blood, particularly if they appear to have large veins; these are found in the more slender and darker women, while smallness of the veins is characteristic of those who are plump and fair, and in these it is better to scarify the ankles than to cut a vein. And indeed these women have small veins in their legs, so that the right amount does not escape even if they are well phlebotomised.”<sup>347</sup>

14:10 **Gradually:** Understood as increasing the strength of the suction gradually. It is the vacuum caused by the heat that causes the cup to adhere, and this could be controlled by the degree of heating the cup.<sup>348</sup>

14:15 **These cupping vessels may be made of copper or silver:** For more on cupping vessels, see Bliquez, *The Tools of Asclepius*, p. 56 ff.

14:16 **When they are fastened ... they stanch epistaxis:** Galen: “On the same basis too, very large cupping glasses, when applied to the hypochondrium, stop hemorrhages from the nose. However, when [blood] flows from the right nostril, it is necessary to place [the cupping glass] over the liver, while when it flows from the left nostril, it is necessary to place it over the spleen, and when it flows from both nostrils, over both viscera.”<sup>349</sup> Qusṭā ibn Lūqā confirms that cupping the false ribs is beneficial for ending epistaxis, adding that it should be conducted on the same side as the bleeding nostril.<sup>350</sup>

344 Galen, *Cur. Rat. Ven. Sect.*, p. 83.

345 Galen, *Meth. Med. III, XIII*, 971K (LCL 518: 396–397).

346 Qusṭā ibn Lūqā, *Kitāb fī l-Faṣḍ*, p. 339.

347 Galen, *Cur. Rat. Ven. Sect.*, pp. 83–84.

348 Bliquez, *The Tools of Asclepius*, p. 59.

349 Galen, *Meth. Med. II, V*, 316K (LCL 517: 16–17).

350 Qusṭā ibn Lūqā, *Kitāb fī l-Faṣḍ*, p. 342.

14:17 **If they are fastened on the breasts:** Hippocrates: “To restrain menstruation in women, apply a very large cupping instrument to the breast.”<sup>351</sup>

14:20 †.....†: The text is corrupt beginning from the words والحمد لله رب which are still possible to be identified somewhat clearly. Being aware of the context, the continuation most probably contains at least والحمد لله رب العالمين, of which fragments can be observed, but the last line of the text is completely erased. See commentary for § 0:1.

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351 Hippocrates, *Epidemics* II, 16 (LCL 477: 80–81).