MEDICO-PHILOSOPHICAL CONTROVERSIES IN NATHAN B. YO’EL FALAQUERA’S SEFER SORI HA-GUF*

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ABSTRACT

The Sefer Sori ha-Guf (Balm for the Body) is a medical compendium written by the physician Nathan b. Yo’el Falalquera, presumably in the late 14th century. It seems to have been quite popular during the 14th-15th centuries. Written in the vein of the great medical Arabic compendia, the Sefer Sori ha-Guf provided Jewish physicians who did not read Arabic with contemporary Islamic medical learning, which, in turn, was based on classical medical knowledge. Its four sections treat theoretical medicine, practical medicine, the various diseases and their cures, and the benefit of drugs. A wide variety of sources underlies this comprehensive work, which is still in manuscript.

This article examines the background and sources of thirteen of the medico-philosophical controversies described by Falalquera in the sixth chapter of the theoretical section of this compendium. The first two controversies concern the divergent opinions among the physicians on the temperament of spring and the heat in children and young men. Following Ibn Rushd’s Epitome of Galen’s De temperamentis, Falalquera contrasts Galen’s opinion with those of other physicians. The third controversy concerns the question of which climate is the most moderate, a controversy which derives from Ibn Rushd’s Kitāb al-kulliyāt (Coliget). The next deals with the four humors and the blood. Falalquera records the opinions of various physicians, referring inter alia to Galen’s commentator Aś. The other controversies studied in this article are those between Aristotle and Galen regarding the usefulness of the nerves; the nutrition of the organs; the sense of touch; natural pneuma; the function of the testes; the reproductive force of the ovaries; the origin of smell; the origin of voluntary movements and inhalation. Falalquera’s primary source here is Ibn Rushd’s Kitāb al-kulliyāt which he sometimes quotes literally and sometimes paraphrases. In this work as well as in his commentary on the De anima libri, Ibn Rushd tried to solve the controversies between the two authorities by reinterpreting Aristotle’s theories in the light of Galenic doctrine. In most cases, Falalquera adopts Ibn Rushd’s harmonizing approach.

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INTRODUCTION

Our information about the Spanish Jewish physician Nathan b. Yo‘el Falacqua is exceedingly scant. We do not know exactly where or when he was born, where he grew up, where he received his medical training and later practiced medicine. Nor do we know where or when he died. According to the scholarly literature, he lived in the late 13th century and is sometimes identified with Nathan of Montpellier, the teacher of the unknown author of the Sefer ha-Yasher. The only biographical detail of which we are certain is that he studied medicine from works written in Arabic with his father who was also a physician. For thus the author informs us in the introduction to the medical compendium it composed under the title Sefer Sori ha-Guf (Balm for the Body). As to the reason for the composition of this text which remains in manuscript, Falaquera remarks that he did so at the insistence of his colleagues who did not understand Arabic, although he was very reluctant for two reasons. In the first place, because but for a few exceptions in the Mishnah and Talmud, the Hebrew language was very poor in technical terminology and names for diseases, herbs and drugs; and secondly, because his knowledge of Hebrew and Arabic was deficient. No wonder then that the technical terms employed by the author are often in the original Arabic, accompanied by the equivalent term in the vernacular. This holds especially true for his alphabetical list of herbs. Only in a few cases do we encounter a Hebrew term derived from rabbinic literature. An example is the case of the herb called woad (Isatis tinctoria L.) which is described with the following terminology: “Isatis in Talmudic Hebrew (leshon ha-talmud), in Arabic nil and in the vernacular indigo.” The many terms in the vernacular are a rich source for our knowledge of medieval medical botanical terminology in Romance languages. To draw up such a list of synonyms in order to facilitate the identification of the different plant names was a common phenomenon in Arabic and Hebrew medieval medical literature. Perhaps, the most famous example from Jewish circles is Maimonides’ Sharh asmā‘ al-‘aqār (Glossary of Drug Names). In the introduction Maimonides says explicitly that the purpose of his list is “neither the definition of the different kinds of remedies by means of their description, nor a discussion of their usefulness, but rather uniquely the explanation of some of their names by their synonyms.”

The Sefer Sori ha-Guf consists of four major sections: (1) theoretical; (2) practical, namely, regimen of health; (3) the different diseases from head to toe and their cures; (4) drugs, their temperaments, degrees and benefit. The work is prefaced by a learned philosophical discourse on the importance of the study of medicine, of science and
of the study of man’s body. Man is represented as a microcosmos (‘olam qaṭān) who, through the study of his body, can achieve knowledge of the wonders of the world (pil‘ei ‘olam). Man consists of three parts parallel to the three worlds. His head (‘olam ha-kavod) is parallel to the upper world (‘olam ‘elyon), his chest (‘olam ha-hayat) is parallel to the external world (‘olam ha-bisn), and the lower part of his body is parallel to the lower world (‘olam taḥton). Man is superior over the animals because of his soul; he should aim for the activation of its rational part in order to achieve perfection of the soul (shelema‘ut ha-nefeš). However, this can only be accomplished after one has achieved the perfection of one’s body (shelema‘ut ha-guf). And this perfection is only possible through the study of medicine.10 The theoretical section of Sefer Šorî ha-Guf is subdivided into three parts. Of these, the first part (eight chapters) deals with “natural things,” the second (ten chapters) with the “causes” (of health and illness), and the third (ten chapters) with the “symptoms” that indicate health and illness.

The Sefer Šorî ha-Guf is basically an adaptation of material derived from classical and medieval physicians. It is a learned theoretical treatise in the vein of the great Arab medical compendia composed by al-Majûtî and Ibn Sinâ. Only minor sections of this vast compendium have been studied so far, namely, that on gynaecology,11 and on respiratory diseases.12 Although we do not know about quotations from the Sefer Šorî ha-Guf in subsequent literature, the work must have been quite popular and in demand in certain Jewish circles, especially in the 14th–15th centuries. For no less than thirteen of the twenty-four extant manuscripts of this text go back to this particular period.13 The work occupies a unique position in the history of Hebrew medical literature, since it is the only representative in the Hebrew tradition of the genre of the great Arab medical compendia.14

In the following pages we shall discuss the medico-philosophical controversies treated by Falaquera in the first theoretical section of his compendium. These controversies feature above all in the sixth chapter of this section, the subject of which is the usefulness of the different parts of the human body.15 From these controversies we have selected the following items: (1) the temperament of spring; (2) heat in children and young men; (3) temperament of the climates; (4) the four humors and the blood; (5) the usefulness of the nerves; (6) the nutrition of the organs; (7) sense of touch; (8) natural pneuma; (9) function of the testes; (10) reproductive force of the ovaries; (11) the origin of smell; (12) origin of voluntary movements; (13) inhalation. As will be seen in more detail below, Falaquera’s main source for his discussion of these controversies, in which Aristotle and Galen figure as the major opponents, is Ibn Rushd (1126–1198).16 However, Ibn Rushd is part of a long prior tradition that had placed Galen and Aristotle in opposition with one another.17 Already in antiquity, Alexander of Aphrodisias allegedly composed a treatise On the Refutation of Galen’s Criticism of Aristotle.18 According to Arab bibliographers, John Philoponus composed commentaries on several

10 Fols. 9r–16v.
11 According to Barkai, Dinah, the major sources of the Sefer Šorî ha-Guf are the K. al-QUENCE of Ibn Sinâ and the Šūd al-Mustâfîr of Ibn al-Jazzâr. This last contention is certainly untrue, if only because of the totally different structure of the Šūd al-Mustâfîr which lacks the long theoretical general section. The question whether Falaquera consulted Ibn Rushd’s writings in the original or used Hebrew translations deserves consideration but is beyond the scope of this article. See also Steinschneider, Hebräische Bibliographie 20 (1880) 19.
13 Thus al-Farabî in R. fi ‘a‘dā‘ al-insân (ed. ʿAbdahrāhīm Badawi, in Traité philosophiques par al-Kendi, al-Farâb, Ibn Bīja, Ibn ʿĀdi, 2nd ed. [Dar al-Andalus, 1980], p. 60, l. 12). We owe this reference to Fritz Zimmermann who is preparing an article on the philological criticism of Galen from Alexander to Averroes. See also Bürgel, Averroes, p. 287. The following review of the discussion of medico-philosophical controversies among Arab physicians is selective rather than exhaustive. Much relevant material can also be found in Ibn Sinâ’s K. al-QUENCE. We hope to return to this subject in a special study.
of Galen's works, and according to Ibn Rūdwan, he is the author of a monograph entitled The Doubts in which he expounds some alleged errors of Galen. Among the great Byzantine compilers we hear about individual physicians whose criticisms mostly derive from their practical experiences. Among the Arab physicians an important critic of Galen was al-Raäzi (d. 925). His criticism can be found in a special monograph devoted to the subject, entitled K. al-shuukük aššā Jāfūţā (Doubts concerning Galen). In this work the author sometimes continues the tradition of scholarly discussions based on the Aristotelian-Galen controversy. At other times, however, his criticism stems from his personal clinical experience. Al-Raäzi used to collect the notes of his cases and check them against Galen's theories. His attack on Galen in the K. al-shuukük did not remain unanswered. Several physicians, for instance, Ali ibn Rūdwan (d. 1068), Abūl-Ḥāšim ibn Zuhur (d. 1130–31) and Abū al-Latīf al-Baġhdādī (d. 1231–32), came to the defense of Galen by solving the problems raised by al-Raäzi. But the K. al-shuukük was not the only outlet for al-Raäzi's criticism of Galen. Critical material has also been preserved in al-Raäzi's greatest work, namely, his K. al-ḥawāfat (Liber continens), and in his commentaries on several of Galen's works which have not been explored so far. Al-Fārābi (d. 950) is most well-known for his criticism of Galen's logic which is preserved in his large commentary on Aristotle's Analytica priora and in his commentary on Aristotle's De interpretatione. In his treatise On the Parts of the Human Body al-Fārābi strikes a more conciliatory tone when he remarks that Galen and Aristotle often agree and only rarely disagree, and that more than once the controversy is the result of a confusion in terminology, as in the case of the term for "nerves." Al-Fārābi notes that Aristotle knew many of the parts which Galen calls nerves, but called them subul (passages). He states that to decide whether Aristotle or Galen is right is only difficult when dissection is required, but that a decision based on Aristotelian logic is simple in all other cases based on logical conclusions. From this statement the conclusion seems justified that al-Fārābi considered Galen as an authority in medical issues but not in philosophical ones. In his treatise On the Parts of Animals, Their Actions and Forces, al-Fārābi basically contrasts Galen's De usu partium with Aristotle's De partibus animalium and defends Aristotle against Galen. In a lengthy and detailed discussion al-Fārābi lends his support to Aristotle's view of the heart as the main seat of the vital and mental powers against Galen who defended the primacy of the liver and the brain. Al-Fārābi's criticism of Galen was familiar to Ibn Rushd who, like Maimonides, adopted al-Fārābi's concept of the division of medicine into seven parts. While defending
Aristotle’s position concerning the primacy of the heart against Galen. Ibn Rushd remarks in his commentary on Aristotle’s De animalibus that “Abū Nasr [al-Fārābī] criticized Galen on this subject in a long and detailed treatise.” It seems reasonable to suggest that this treatise was al-Fārābī’s On the Parts of Animals, Their Actions and Forces. In his commentary, Ibn Rushd, like al-Fārābī before him, repeatedly contrasts the theories of Aristotle and Galen on the parts of the body. Ibn Rushd tries to solve the Aristotle–Galen differences by re-interpreting Aristotle’s theories in the light of Galenic doctrine, and by describing Galen’s doctrine in Aristotelian terminology, in short, by harmonizing Aristotle and Galen. In line with this harmonizing of both authorities is also Ibn Rushd’s view that the anatomical discoveries made by Galen and others are not contradictory to Aristotle but complementary. The same method of reconciliation is adopted by Ibn Rushd in his K. al-kulliyāt, although this work is better known for its pronounced criticism of Galen.

Much as Ibn Rushd responded to a long and well-established tradition in addressing the divergent views of the two authorities, Falaquera, too, followed in the footsteps of other Jewish authors. The three encyclopedias of science and philosophy that were written in the 13th century, namely, the Midrash ha-Hokhmah by Judah ben

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Solomon ha-Cohen, the De'ot ha-Filosofim by Shem Tov ibn Falalaqera, and the Sha'ar ha-Shamayim by Gershom ben Solomon, all deal with several of the controversial issues between Aristotle and Galen which occur in the Sefer Šorî ha-Guf. However, in these texts the conflicting opinions are discussed within the context of Aristotelian natural philosophy, in particular, Aristotle’s biological writings. Nonetheless, it does not seem too farfetched to suppose that in writing his medical encyclopedia Nathan ben Yohel Falaluqera was prompted by the same drive to collect and store knowledge as were these encyclopedists.

MEDICO-PHILOSOPHICAL CONTROVERSIES DISCUSSED BY NATHAN BEN YOEL FALALUQERA

1. Temperament of Spring (fol. 7r)

Falaquera quotes Ibn Rushd as saying:

The opinion of those who said that the temperament of spring is hot and moist, is correct. This is contrary to the opinion of Galen in his De temperamentis, where he explains that spring is moderate, since it originates from the four qualities in an equal measure. However, if these four qualities exist in it in an equal measure, as Galen said, the activities of life in living beings which are caused by heat and moisture would not exceed their opposite which is caused by cold and dryness. It follows necessarily that the temperament of spring is hot and moist (par its own) and that it is balanced (in its effect on the human body), for it is the middle between cold and heat.

Commentary

Falaluqera’s quotation is derived from Ibn Rushd’s Epitome of Galen’s De temperamentis. In this commentary Ibn Rushd remarks that every season is dominated by one of the four elements, in a way that the four seasons balance each other, so that the one cannot destroy the other. A similar balance can be found, he says, in everything that exist in the natural world, in animals and plants, securing
their survival. This is, according to Ibn Rushd, the so-called natural balance (al-ﬁdāl al-pabît) which can be found at all times. As an entity on its own, spring is hot and moist, but in its relation to the human body, it is balanced. Ibn Rushd criticizes Galen for assuming that spring is balanced on its own, for if this were the case the temperament would always be like spring, so that everything that exists would perish.

It should be noted that in his K. al-kulliyät (Colliget) Ibn Rushd defines spring differently. He remarks that the physician should know the natures of the four seasons since they are one of the elements on which health is dependent. He remarks that during spring the nutritive force is most active. And since the activity of this force is dependent on the natural heat which is moist and hot, one can say that the temperament of spring is moist and hot in relation to the human body. But in relation to human activity (ﬁ’l al-insân), especially that of young men, Ibn Rushd says that spring can be defined as balanced in temperament.41

Elements of Ibn Rushd’s argument against Galen already feature in Galen’s De temperamentis. Galen remarks that some philosophers (Athenaeus, Theophrastus, the Stoics, and according to some, Aristotle) hold that since life is the opposite of death, which is cold and dry, it is necessarily hot and moist.42 And that everything that is most similar in temperament to life has the best temperament. According to this reasoning, says Galen, it necessarily follows that which is well-tempered is dominated by hot and moist. However, these philosophers are wrong. They are mistaken in two ways when they assume that spring is both hot and moist and well tempered: firstly, because they suppose a conjunction (syzygy) of the four seasons of the year with the four temperaments, and secondly, because they conclude, according to this argument, that spring is warmer than winter and more moist than the summer.

Having refuted these philosophers, Galen builds his own argument according to which spring is a balance of the four qualities. Building upon Hippocrates’ statement that spring is most wholesome to humans, Galen reasons that spring cannot be hot and moist. For we know that when the air has a hot and moist temperament it causes many diseases. Moreover, we know from our senses that it is most healthy when neither of the four qualities of hot, cold, moist and dry dominates, but when all are present in an equal degree (balanced). Consequently, it is impossible, says Galen, to attribute to spring the qualities of hot and moist, as some philosophers did. Thus, according to Galen, spring is the most wholesome of the seasons and since that which is most wholesome is that which is well balanced, spring is consequently well balanced.43

2. Heat in Children and Young Men (fol. 7r)

Falaquera remarks:

Some physicians say that the heat of young men is stronger than that of children, but this is not true. The heat of children is either stronger in relation to their bodies or similar to that of young men, for their digestion is stronger and, contrary to young men, they possess the faculty of development and growth. The reason why our sense of touch tells us that young men are warmer is that their heat is drier, while the heat of children is absorbed in moisture. Galen held that the heat of children and young men is one and the same and can be compared to that of the water and air which cannot be determined by means of touch, for the heat of the air is stronger.

Commentary

Falaquera’s statement is derived from Ibn Rushd’s Epitome of Galen’s De temperamentis. Ibn Rushd says that the physicians disagree about the heat of children and young men, and that both parties have

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strong arguments in their favor. For instance, those who hold that children are warmer can adduce the argument that children are closer in age to the foetus which is very warm since it consists primarily of blood, and that children grow, while growth is made possible by heat and moisture. But those maintaining that young men are warmer can argue that young men have more blood and more yellow bile which is by far the warmest element. Ibn Rushd rejects the arguments of both parties, since their conclusions do not necessarily follow from their premises. In his opinion, the only valuable way to settle the argument is through the sense of touch. Ibn Rushd remarks that the heat of children and young men is essentially the same and only differs in its dry and moist quality, and that precisely this difference has deluded the physicians. For the heat of children is vaporous, abundant and pleasant to touch, while that of young men is somewhat pungent and less pleasant to touch. 44 In his De temperamentis Galen states that this is the reason why many think that the heat of young men is stronger. 45

Falaquera’s statement, in the name of Galen, that “the heat of children and young men is one and the same and can be compared to that of the water and air which cannot be determined by means of touch for the heat of the air is stronger” is a corruption derived from Ibn Rushd’s Epitome as well. The author illustrates the difficulty involved in the use of the sense of touch for the measurement of bodily heat by comparing it to the measurement of the heat of the air in the bathhouse. He remarks that the air can be of a constant heat and someone feeling it can have the impression that the air varies, sometimes being vaporous and nebulous, sometimes pure, and sometimes smoky. An unreflecting person might conclude from the sensation of variation in the quality of the air that its heat varies as well, while it is essentially the same. Similarly when an unreflecting person touches a dry stone that is as hot as water he might conclude from its dry quality that it is warmer than the water. 46

3. Temperament of the Climes (fol. 7v)

Some scholars said that the fourth is the most moderate of these seven climes and that in this climate the (different skin) colors indicate the temperament. For this clime is not distinguished by (specific) colors because of the moderateness of the air in it, but it is distinguished by the temperament of man. According to Ibn Sinā, the most moderate place is that which is in the middle of the world, for in this place the air does not change perceptibly. However, Ibn Rushd attacked this, saying that according to Aristotle this place is uninhabited owing to the extreme heat there. Galen held the fifth clime to be the most moderate.

Commentary

Falaquera brings up the issue of the seven climes in connection with the colors of the body. Since the climes affect the colors of the body, it is important for a physician to be knowledgeable concerning the boundaries of the climes and the various mixtures related to the climes. In his K. al-kulliyāt Ibn Rushd mentions “color” as one of the signs that indicates the degree of moderation in the mixture, asserting that in the moderate clime, indications provided by color and hair are more reliable. 47 The idea that the fourth clime, i.e., the middle of the seven climes that constituted the inhabited earth in the northern hemisphere, 48 was characterized by “moderation in all things” was widespread among medieval Muslim and Jewish scholars. 49 According to this notion, the moderation in this clime was due to its temperature, other climes being either too hot or too cold to enjoy this privileged position. 50 Ibn Sinā’s theory about the habitability of the equatorial zone is to be found in the section of his Shifāʾ that deals with meteorological

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47 For the origin of this theory in antiquity, cf. E. von Hesse, Die sieben Klimata und die tödliche Erkältung (Heidelberg, 1929).
49 The idea that heat and cold in a given region determine not only vegetation and animal life, but also the constitution of human beings can be traced back to Hippocrates.
issues. The frame of reference here is that of the seven climes, but a five-zone division of the earth. According to this scheme, which is said to have originated with Parmenides, the earth can be divided into three regions that are uninhabitable, namely the two polar regions, where habitation is impossible due to extreme cold, and the torrid or equatorial zone, which is uninhabitable due to extreme heat. In contrast, the two zones that lie in between, extending from the tropics to the arctic circles in the northern and in the southern hemisphere, are moderate and therefore inhabited.

However, as is evident from Falaquer's description, some scholars believed the equatorial zone to be moderate and therefore habitable. Ibn Sinā declared this region to be "most fit for habitation and the first as regards moderation." To support his thesis he argued that the region around the equator cannot be extremely hot, because the sun approaches it quickly and recedes from it quickly. In other words, it does not remain there long enough for the air to be heated by it. Moreover, at the equator the night lasts as long as the day. Therefore, this region is neither extremely hot, nor extremely cold; rather it is always spring there. Ibn Rushd criticized this view in his two commentaries on Aristotle's Meteorology, the Middle Commentary and the Epitome. In the Middle Commentary, Ibn Rushd did not ascribe this theory to Ibn Sinā. In the Epitome, Ibn Rushd explicitly attributed to Ibn Sinā the thesis that the torrid zone is inhabited and that this region is "the most moderate climate." In both works the commentator subscribed to the Aristotelian position that this area is uninhabitable owing to extreme heat, arguing that the heat in the torrid zone does not admit of what he calls "natural life." Furthermore, he adduced the logical argument that the existence of an extreme cold zone and an intermediate zone logically implies the existence of an extreme hot zone. The absence of any reference to these arguments

In the Sefer Shori ha-Guf it seems to indicate that Falaquer did not actually use these commentaries, limiting himself to recording what was common knowledge in his day, namely that Ibn Rushd refuted Ibn Sinā on this issue.

In his K. al-kulliyār Ibn Rushd briefly states that the lands on the equator are not moderate "as many people think" without, however, mentioning Ibn Sinā by name. Ibn Rushd claims that the region where winter is short and spring lasts a long time is the most moderate country. According to him, this happens to be the case in the fifth clime and especially in lands lying near the sea. In Andalusia, which is situated in the first part of the fifth clime, winter lasts approximately two months. From this it follows that Andalusia lies in the moderate zone, even though it belongs to the fifth clime and this is why Ibn Rushd asserts that the fourth is not more eminent than the fifth. To this he adds that Galen held Greece to be the most moderate place, a statement which underlies Falaquer's remark that the fifth clime was the most moderate clime in Galen's opinion, Greece and Andalusia being considered as belonging to the same zone.

4. The Four Humors and the Blood (fol. 8r)

There are four humors corresponding to the (four) elements, namely, blood, phlegm, yellow bile and black bile. Living beings consist of these four humors in different mixtures and colors. This is the opinion of Galen and Hippocrates, according to whom water, air, fire and earth are elements alien to the human body, whereas the four humors are close to it. Black bile is similar to earth, yellow bile similar to fire, phlegm similar to water, and blood similar to air. Many physicians disagree with them and say that the matter close to man from which he is formed is the blood and that these humors are the surplus of blood. They are separated and segregated from the blood when it is boiled. According to them, the yellow bile relates to the blood as the foam that appears on top of the wine when it is boiled. Phlegm is cold and moist; it is colder than the other humors; its color is white; it is viscous; its odor rises; its sea is the lung; it governs the chest and the joints of the

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53 K. al-Shafi‘, ed. M. ibn Ishāq, p. 29, ll. 10–15. In classical times the habitability of the equatorial zone had been defended by Posidonius; cf. Kidd, Posidonius, pp. 236–237 and ident. op. cit., (ii) Fragments 150–293 (Cambridge, 1988), pp. 75–82 and, according to Strabo, also by Polybius and Eratosthenes (Strabon Geography 2.2.1).
55 Javāmi‘, ibid., pp. 48–49.
56 Kulliyāt, ed. Fārāzand Bāshīrī, p. 103.
57 Ibid.
body. Some said that this humor does not have a special place in the body (for its evacuation).

Galen wrote that the reason that nature has not prepared a special organ for it [phlegm], as it did for the two biles, is that this phlegm is similar to blood in terms of the need of the organs. It therefore behaves like blood. According to Ibn Sinâ the reason is that it [phlegm] will be close to the organs, for when the organs lack food, the natural heat boils it and the organs draw their food from it.

The third kind (of the five kinds) of yellow bile is similar to egg yolk, since it is thick. Some physicians say that it is thick because it is mixed with phlegm. According to them it is not hot like the natural kind which is the red one that can be found in the gall; this is the opinion of Hunayn and Ibn Sinâ. However, Galen's opinion, according to his commentator 'Ali, is that the thickness can be found in this kind because of the large amount of heat and that it is therefore bad.

Commentary

The theory that the human body consists of a mixture of four humors features extensively in several treatises of the Hippocratic corpus. But it seems that Falsaqua's opinion on these four humors was especially influenced by the author of the De natura hominis. Hostile to the intrusion of philosophical elements into the field of medicine, the author remarks: "For I do not say at all that a man is air, or fire, or water, or earth, or anything else that is not an obvious constituent of a man." He considers the four elements, as alien to the body and refutes both the opinion of those who hold that the body consists of one of the four elements, and of those who think that it consists of one of the four humors. If there would be only one element, the author argues, neither generation or pain would be possible. He then remarks that the body of man consists of all the four humors together. In his commentary on De natura hominis, Galen remarks that Hippocrates not only disagrees with those philosophers who hold that the human body consists of one of the four elements but also with those who think that it consists of all the four elements.

In his De temperamentis, Galen develops his own theory of the four humors and their qualities, which in human beings could be combined into any one of nine mixtures or temperaments. Although he aligns the four humors with the four elements, most of his writings speak of qualities, not elements. The idea that phlegm, yellow bile and black bile are nothing but residual products of the coction of blood was held by the ancient physicians, as we know from Galen's De facultatibus naturalibus. In this treatise Galen describes what happens in the generation of the humors according to the belief and demonstration of these physicians of antiquity. He compares the generation to the fermentation of new wine. During this process two residual substances are formed, one called the "flower," which is light and afloat, and the other called the "lees," which is heavy and more earthlike. Yellow bile is, according to Galen, similar to the flower and black bile to the lees.

The cold, moist, white and viscous properties of phlegm were universally recognized within the context of the humoral theory. They are mentioned in different places in Galen's works. Falsaqua's quotation from Galen about the function of the phlegm is probably derived from Ibn Sinâ's K. al-qâânîn, where the author remarks: "About the sweet, natural variety Galen remarks that nature has not prepared a special organ for its evacuation, as it did for the two biles, because the phlegm is close in resemblance to the blood which all the organs need." Ibn Sinâ remarks that there are two reasons for this, one necessary (for the body), namely, that (in this way) the phlegm can be close to the organs to provide them with food, and the other of a

60 See especially De temperamentis 8 (Kühn, 1:554–559).
62 On the Natural Faculties 2.9, ed. and translated by A. J. Brock in Loeb Classical Library, Alcyon Thrasymachus of Sardis, according to Menon (Anonymous Londinensis 11.4–12.8) explained bile and phlegm as morbid corruptions arising from blood (see Lonie, p. 58, n. 60).
63 See Commentary on the Nature of Man 1.33 (ed. Mewaldt, pp. 42–43); Pseudo-Galen, De humoribus (ed. Kühn 19:486–490). Galen discusses three kinds of phlegm, namely, sweet, salt, and sour, and their properties extensively in De februium differentiis 2.6 (Kühn, 3:547–550); a fourth kind, namely, the tasteless one, is added to these in De humoribus (Kühne, 19:490).

utilitarian nature, namely, to provide moisture to the frequent moving limbs and organs.  

Ibn Sinā and Hunayn ibn Ishāq indeed describe the third kind of yellow bile, namely, the non-natural one, as thick as egg yolk since it is mixed with phlegm and not as hot as the natural one.  

We have not been able to locate the statement by the commentator called ‘Alī, according to whom Galen thought that this variety of yellow bile is of a thick consistency because it is very hot. The commentator is possibly identical with ‘Alī ibn Riḍwān (11th century) who composed numerous commentaries on both Hippocrates and Galen, many of which are no longer extant. According to the bibliographer Ibn Abī Usāfī, ‘Alī ibn Riḍwān glossed numerous books of Hippocrates and Galen concerning humors. The statement by ‘Alī is possibly an interpretation of Galen’s remark in De atra bile that the yellow bile that is mixed with fine moisture when it is tossed about a lot, becomes like egg yolk. This is the way in which it is quoted by Maimonides in his Aphorisms: “The yellow bile whether it is saturated in color or not and similarly when it is greatly heated until it becomes like egg yolk originates from veins and arteries. It is thus possible that Maimonides consulted the same source as Falaquera.

5. On the Usefulness of the Nerves (fol. 9v–10r)

The nerves are cold and dry and many doubts exist concerning their usefulness. According to Galen their usefulness is to bring about sensation and voluntary movement to all the members. His proof for the fact that sensation and locomotion occur in [or, are brought about by]

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66 Ibn Sinā specifies four kinds of phlegm: sweet, sour, astringent, and tasteless (ibid., p. 15).
71 See Schacht and Meyerhof, Ibn Butlan and Ibn Riḍwān, p. 45, no. 49.
72 De atra bile 2 (ed. W. de Boer; MG V.4.1.1, Leipzig-Berlin, 1937), pp. 73, 1.30–p. 74, 1.2); see as well Galen’s Commentary II on Hippocrates’ Prognosticon 38 (Kühn, 188B, 2, p. 165).
73 Fawā’il Mūsā fī l-tibb, Bk. 2, no. 3; forthcoming edition by Gerrit Bos in the Arabic Scientific Texts series (Brigham Young University, 2001).
The conclusion, "in general it appears that the usefulness of the nerves is of the same kind as that of the brain," taken over by Falalquera from his source, aptly illustrates Ibn Rushd's way of harmonizing the divergent opinions of Aristotle and Galen. By suggesting that both authorities were in agreement as to the connection between nerves and brain, he attempts to smooth over the differences between them, an approach which apparently finds approval with Falalquera.

6. Aristotle and Galen on the Nutrition of the Organs (fol. 10b)⁷⁹

You should know that according to Aristotle the nourishment of the organs comes from the mixture of these kinds of blood [i.e., that of the liver and the heart] and that the blood in the liver and the veins is as (raw) material for the blood sent from the heart through the arteries. The latter blood acts as a form for the former one, that is to say, that it makes it perfect and boils it and prepares food from it that is really close [i.e., congenial] (to the organs).

According to Galen, the blood comes from the liver and the veins to the organs and it is the nourishment that is close [i.e., congenial]. The opinion of the scholar is that the blood in its quality of blood is nourishment for the organs and that since these two kinds of blood stream to every organ, every organ is necessarily fed by it. And since one of the two kinds is crude, unboiled, and the other boiled, it necessarily follows that the boiled blood is of the kind that, just like form, is beneficial and makes it perfect, as is clear from the science of physics. It is clear from the words of Galen that he admits that the organs are fed by the blood of the veins, and that for this reason he ordered venesection in case of constant headache and the disease called "migraine."

Commentary

Falalquera's discussion of the controversy between Galen and Aristotle concerning the nutrition of the organs is derived from Ibn Rushd's commentary on the De animalibus.⁸⁰ It is in fact not the description of the controversy itself but rather the attempt made by Ibn Rushd himself to bridge the gap between Aristotle and Galen. Ibn Rushd tried to achieve this by reinterpreting Aristotle's theory on the origin of blood in the light of Galenic doctrine, and by describing Galen's doctrine in Aristotelian terminology. Aristotle did not say that "the nourishment of the organs comes from the mixture of the blood of the liver and the heart, and that the blood in the liver and the veins is as (raw) material for the blood sent from the heart through the arteries." On the contrary, he is very explicit about the fact that the liver plays no role whatsoever in the distribution of the blood, and thus nutrition, to the bodily parts.⁸¹ On the other hand, Galen did not describe his theory of the origin of the blood in terms of matter, form, and perfection.⁸²

That both statements in fact represent Ibn Rushd's own reinterpretation and solution for the controversy is borne out by the following text from his commentary where the author remarks: "We should assume that the relationship between the blood that originates in the heart and the blood which originates in the liver is one of form and matter; therefore we do not say that the organs are not fed by the blood through the arteries, but we say that the blood of the arteries that reaches the organs is that which boils the blood of the veins that reaches them and gives it its form."⁸³ The description of the process of nutrition by Ibn Rushd is essentially the same as both that of Galen and of Aristotle quoted above. Our text is thus a fine example of how Ibn Rushd tries to harmonize Galen and Aristotle by incorporating Galenic teachings into Aristotelian doctrine and Aristotelian teachings into Galenic doctrine.⁸⁴

It should be noted that in his K. al-kulliyāt Ibn Rushd's tone is less conciliatory than in his commentary on De animalibus when he attacks Galen twice rather sharply for his opinion that the liver has priority over the other organs because of its nutritive function.⁸⁵ This is also clear from the position taken by Ibn Rushd himself which he describes as follows: "If all of this is as I have described, it is clear that the relationship between the heart and the liver is like the relationship which Galen suggests between the liver and the other nutritive organs, for the heart necessarily has dominion over the liver as far as this faculty is concerned [i.e., the nutritive]. The liver alone is not

⁷⁹ Kulliyāt, ed. Fórneas Besteiro, p. 56, l. 6–7.
⁸⁰ See Bürgel, Averroes, p. 292.
⁸¹ MS Paris hebr. 9566, fol. 432v–435v.
⁸² See no. 11 below for a less conciliatory approach by Ibn Rushd.
sufficient to perform its activities. It can only do so by means of the heat that in a certain quantity and quality reaches it from the heart. 86 This text by Ibn Rushd is the source for Falaquera's statement: "Since (in Galen's opinion) the liver is the head and ruler of all the nutritive organs, Galen thought that it is the main organ containing this, that is, the nutritive faculty, for he did not notice that nutrition ultimately originates from the heart and that the heart contains the first [i.e., main] nutritive force" (fol. 12r). This text is part of a larger section entitled "On the Usefulness of the Liver," in which Falaquera gives an extensive description of its role in the nutritive process. 87

7. Sense of Touch (fol. 10v)

According to Aristotle, the flesh is the primary instrument for the sense of touch. The heart is the principle for this faculty and the nerve serves the flesh, for the faculty of sensation proceeds through an intermediary. Therefore, the heart is made up of flesh, since it is the principle of this faculty. Galen, however, believed that the part which is useful for sensation is the nerve. In his opinion the flesh, which Galen calls "dull," and with this he means the vessels (gidiim) which consist of bones and flesh—is the instrument for local movement, . . .

Later on when discussing the usefulness of the senses in general Falaquera observes (13v–14r):

Concerning the instrument which is capable of touch there exist many doubts. Galen considers the nerve which originates from the head to be the appropriate instrument for this sense . . . whereas Aristotle holds that this instrument is the flesh. This is related to their opinions about the head, 88 for Galen holds that it is the seat of the five senses, and that it is, moreover, the main (instrument) for this activity, because it maintains it alone. Aristotle believes that the heart is the principle of this activity, the head serves (i.e., is second to the heart) in performing this function. He adduces proofs for this, namely, that the heart provides the head with the heat which is moderate in quantity and quality in accordance with what is necessary for every sense in the head. . . . Since this is the case, and since we see that the heat which the senses are conducted is the heat of the heart, the main sentient faculty is in the heart, while the head serves this faculty. It is the ruler and the principle

of the other parts. It has been explained that the head serves the heart in this activity as the general serves the king to fulfill his wishes.

Commentary

The primary source for Falaquera's description of the divergent opinions on the organ of the sense of touch is Ibn Rushd's K. al-kulliyat. His discussion of the usefulness of the senses in general (fol. 13v–14r) is derived in its entirety and almost literally from this text. 89 In this section Falaquera again records the opinions held by Galen and Aristotle which he had already recorded in his discussion on the sense of touch (fol. 10r–v), dealing, however, more extensively with the related question of the primacy of the heart. In several of his writings Aristotle states unambiguously that the flesh is the organ of touch, 90 a position which was rejected by Galen, who establishes instead the nerves as the instrument for this sense. 91 Likewise, Galen posits the brain as the center of the nervous system, thus attacking Aristotle's doctrine of the heart as the primary seat of sensation, motion and nutrition. 92 In reproducing the views held by the two authorities through the intermediacy of Ibn Rushd, Falaquera again transmits Ibn Rushd's attempt to reconcile these divergent opinions. Ibn Rushd ascribes to Aristotle the position that the nerves "serve" the flesh, 93 and, more generally, that the head serves the heart. 94 He adopts the same approach in his commentary on Aristotle's De animalibus, stating that the brain is the cause of sensation and locomotion only "in second intention," not as a first cause. 95 No such position is to be found in Aristotle.

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86 Sori ha-Guf, fol. 13v, 11. 5–12 corresponds to Kulliyat, ed. Fornæus Bêteiros, p. 75, l. 13–p. 76, l. 6 with a slightly different formulation at the end; Sori ha-Guf, fol. 13v, 11. 12–6 = Kulliyat, ed. Fornæus Bêteiros, p. 77, l. 1–p. 78, l. 4; Sori ha-Guf, fol. 13v, 11. 26–28 = Kulliyat, ed. Fornæus Bêteiros, p. 87, ll. 6–11 (abridged). 87 De partibus animalium 647a20–21, cf. also 656a28, 665a12ff.; De anima 422b31ff., De sensu 438b25ff. H. Blumberg, AVERROES. Epitome of Purva Naturalia, translated from the original Arabic and the Hebrew and Latin versions; Corpus Commentariorum Averrois in Aristotelian 7 (Cambridge, MA, 1961), p. 69, n. 31, points out that Aristotle regarded the flesh both as the organ and as the medium of touch, and that he does not decide in favor of either one of them. 88 Cf., for example, De usu partium 1.18, 3.11, 5.9. 89 De partibus animalium 647a23. 90 Kulliyat, ed. Fornæus Bêteiros, p. 57, l. 14 (wa-an na al-ašab khalīm li-luḥn). 91 Ibid., p. 76, ll. 5–6. 92 MS Paris hebr. 956d9, fol. 425v–426v; cf. Kaufman, "Die Sinne," pp. 62–70.
Ibn Rushd thus accepts a "Galenized" form of Aristotle's opinion and Falaquera follows his source, quoting literally and extensively the argumentation which Ibn Rushd adduces in support of his thesis. The main points of this argumentation are these: the heat by which sensation operates is different from that by which nutrition operates, as is evident from the various ways in which both activities are at work in a waking or sleeping body. Sensation which takes place during sleep cannot have its origin in the brain owing to the coldness of this part, but only in the heat which is spread in the body from the heart. Falaquera ends his discussion with a treatment of the question of how the head serves the heart. This question as well as its answer are again taken over from the Kulliyat, where Ibn Rushd explains that the brain, which is very cold by nature, serves as the opposite of the extreme heat of the heart. Thanks to the moderation of this heat by the brain the senses can perform their activity in the most perfect way. This cold could not be placed in the heart from the beginning, for if it were in the heart, the parts of the body would be defective in their functions.

The Kulliyat is also the source for Falaquera's discussion of the controversy on the sense of touch (fol. 10v), as is borne out, for example, by his observation that Galen calls the flesh 'cold'. It would seem, however, that he also used Ibn Rushd's commentary on Aristotle's De animalibus when dealing with this issue, for in the lines preceding it he reproduces Aristotle's arguments in favor of the flesh as the organ of touch: the definition of animal is that it is a body that is nourished and experiences sensation by the sense of touch: touch is common to all animals; it is not limited to one part of the body, but must be in a part which is homogeneous and simple, and there is no part which matches this description but the flesh. Therefore the heart, being the origin of sensation, is fleshly. This argumentation is to be found in Ibn Rushd's commentary on the De animalibus.

and only partly in the Kulliyat. It should be noted, however, that Falaquera does not take over the solution of the controversy Ibn Rushd adopted in his commentary, according to which sensation takes place in the flesh by the intermediacy of the nerve.

8. Natural Pneuma (fol. 11r)

The seat of this pneuma is, according to Galen, in the liver. From the liver it passes to the whole body. According to Aristotle, its seat is in the heart.

Commentary

The concept of the pneuma, a sort of very subtle and fine matter, which is the link between the material and spiritual nature of man, played a central role not only in medical physiology but also in philosophical psychology. According to the theory dominant in the Middle Ages, three kinds of pneuma were distinguished: natural, vital, and psychical.

Galen only rarely discusses the natural pneuma and its location. If it played any role at all in his medical system, it must have been a minor one. In fact, he even doubted its very existence as is clear from his remark in De metodo medendi: "And if there is a natural pneuma, it would be contained in the liver and veins." The concept of the natural pneuma was only fully accepted by Galenists at a later time, so that the concept of three pneumas would fit into the tripartite scheme of three ventricles and three faculties. Falaquera's remark that according to Galen the seat of the natural pneuma is in the liver from where it passes to the whole body, is either based on the quotation from De metodo medendi, or derived from a later unknown source ascribing to Galen a theory about which he was very ambiguous.

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96 Kulliyat, ed. Förneas Besteiro, p. 77, l. 1–p. 78, l. 4, cf. n. 6. It should be noted that instead of the Arabic "in accordance with what is specific (khayālatum) for every sense" Falaquera has "what is necessary," apparently reading bādījūtun.
97 For Ibn Rushd's argumentation see Gärtner, "Die "inneren Sinne"", p. 291.
99 See Kulliyat, ed. Förneas Besteiro, p. 57, ll. 17–18. In De usu partium 2.16, Galen states that flesh is a part of muscle, while in De usu partium 12.5 he explains that the totality of flesh, nerves, ligaments and tendons becomes "muscles."
100 Fols. 10v–v.
101 MS Paris hebr. 956/9, fols. 422v–423r.
104 De metodo medendi 12.5.
105 See for an extensive discussion Siegel, Galen's Physiology and Medicine, pp. 186–189.
106 Ullmann, Islamic Medicine, p. 63; May, Galen on the Usefulness, 1:48–49.
107 Cf. Gershom ben Solomon of Aries, in Bodenheimer, Gate of Heaven, p. 292, no. 370: "All physicians agree with Galenus that the liver has a natural spirit" (see as well p. 293, no. 375).
The idea ascribed to Aristotle that the natural pneumonia is located in the heart is probably also derived from a later source. For Aristotle does not specify a natural pneumonia in his works. The only pneumonia playing a central role in his biology is the so-called connate or innate spirit (pneuma sumphoton or emphluon), a corporeal medium, the vehicle of all faculties of the soul which, it is true, he locates in the heart.107

9. Function of Testes (fol. 12r)

You should know that although the testicles contain the reproductive force, they are not the main (bearers) of this activity, as Galen thought. By themselves they are not sufficient to perform this activity, but (they perform it) by means of the pneumonia that reaches them from the heart, which is moderate in quantity and quality. Therefore Aristotle thought that the force in the heart which moderates this heat until it performs its activity in them is the main reproductive force, the force in the testicles being subservient to it.

Commentary

Falaquera's treatment of the controversy concerning the male reproductive force is derived from Ibn Rushd's Kulliyat, which Falaquera quotes literally.108 Aristotle speaks about the testicles in De generatione animalium.109 Basing himself on the observation that not all animals are equipped with testes, he came to the conclusion that testicles are not necessary for generation, although he was prepared to admit that it is better for animals to have them, since they make the movement of the seminal residue more steady. In his view the function of the testicles is comparable to that of "the stone weights which women hang on their loins when they are weaving."110

Aristotle's position gave rise to much amazement and commentary. In his De semine, Galen refutes Aristotle extensively111 characterizing his view as "so clearly false that not even an enlightened person would fail to see it."112 In Galen's opinion the testicles belong to the "governing parts" of the body along with the brain and the heart. In his De usu partium he describes how blood and pneumonia are mixed in the testes and transformed into semen.113

Ibn Rushd's treatment of the issue under consideration is another example of his harmonizing attitude towards the two authorities. He admits that the testes contain the reproductive force and so gives Galen's view its due, but at the same time he adheres to Aristotle's position by stressing the leading role of the heart. In other words, Ibn Rushd reinterprets Aristotle in the light of Galenic tenets. The same approach is discernible in Ibn Rushd's commentary on De animalibus where he deals with the same issue at considerable length. Although he refutes and rejects Galen's theory he nevertheless admits that the theory deserves credit, stating that the testes have "some activity with respect to semen through which generation and impregnation take place."114 Nevertheless, it is obvious that it is above all Aristotle's position that Ibn Rushd seeks to defend. Throughout the discussion Ibn Rushd indeed acts as Aristotle's spokesman. By following his source Falaquera attributed to Aristotle a view that was, in fact, the outcome of the commentator's harmonizing approach.

10. Reproductive Force of the Ovaries (fols. 12v–13r)

Ibn Rushd wrote that the testicles that, according to Galen, a woman possesses (i.e., ovaries) obviously do not affect reproduction. This is not so strange that it should arouse amazement, for the breasts which women have are for reproduction, whereas the breasts of men do not have this use. However, Galen said that the female sperm contributes to reproduction, that women emit sperm just like men, and that female and male sperm are of the same kind. It seems to me that this was the opinion of the Sages who said: "When the woman emits first, she will give birth to a boy, but when the man is first to do so, she will give birth to a girl." Aristotle, by contrast, said that the female sperm does not contribute to reproduction. He adds proofs to this from the senses and from logical reasoning. The proof from the senses is that he observed that women can become pregnant without emitting sperm, and that it happens frequently that they conceive without deriving pleasure from intercourse. The proof from logical reasoning is that if it were true that the sperm of a woman

109 De generatione animalium 717a12–b5.
110 Ibid., 717a35–37, transl. A. L. Peck in the LCL series.
113 De usu partium 14.10.
114 MS Paris heb. 9569, fol. 452r–453r.
is effective (in generating) without that of a man, a woman could generate on her own without needing a man. If female sperm is sufficient for providing this beginning, then male sperm is not active in reproduction. (On the other hand), if the sperm of the man provides the form of this beginning, the sperm of the woman is not active at all. Thus we see that the formation of the embryo cannot be the result of the activity of both and that both aim at the same end, namely the existence of the embryo. Therefore, everyone contributes the part to that from which the embryo develops. Part of that from which the embryo develops—in as far as it develops—is matter and form. Therefore, of necessity, one of them contributes matter, namely the female, while the other contributes the form, namely the male.

**Commentary**

The major source for Falaquera's discussion of the reproductive force of the ovaries is once again Ibn Rushd's *Kulliyāt*, but here Falaquera limits himself to quoting the main points of his source, omitting several of Ibn Rushd's arguments and observations, as we shall see. Moreover, he changes Ibn Rushd's order somewhat by first presenting Galen's position and then turning to Aristotle. Ibn Rushd's account deals with Aristotle's discussion. The Galenic point of view is not mentioned explicitly, but it is implicit in Ibn Rushd's description of his own position with which he begins this section. Apparently he assumed that Galen's doctrine of the two semina was widely known and that there was no need to elaborate on it.

This text is another example of the way in which Ibn Rushd tried to harmonize the divergent views of Aristotle and Galen. For example, Aristotle's view on the female contribution to generation as presented by Ibn Rushd is the commentator's own interpretation rather than an accurate description of the philosopher's view. Aristotle said explicitly that the female does not contribute any semen to generation, because in women the counterpart of semen is menstrual blood and living beings cannot have more than one seminal residue. Although Aristotle acknowledges the existence of a fluid secretion in women (for instance, during sexual intercourse), he holds this secretion to be different from that of males in that it is not seminal. Therefore, Ibn Rushd's use of the term “female sperm” in the context of his discussion of Aristotle's position is the result of his reinterpretation of Aristotle's view in the light of Galenic doctrine, according to which females do emit sperm, much as men do. Remarkably enough, Aristotle himself has given rise to this interpretation by stating, for example, that menstrual blood is semen in an impure state. Ibn Sinā held that Aristotle in reality endorsed the existence of female sperm, although initially one would gain the impression that he denied it. It thus appears that Falaquera, when using, with Ibn Rushd, the term “female sperm” in connection with Aristotle's view, follows a commonly accepted tradition.

The “proof from the senses” and the “proof from logical reasoning” offered by Falaquera are taken literally from the corresponding section in the *Kulliyāt*, the only difference being that the *Kulliyāt* is more extensive. For example, Ibn Rushd further elaborates on the proof from sense-experience (namely, that sometimes women conceive without deriving pleasure from intercourse) by disclosing that he questioned women about this and that they confirmed this. The logical argument also goes back to Aristotle, who, referring to wind-eggs, argued that females cannot generate on their own. Here, too, Ibn Rushd adduces some arguments in support of this thesis which Falaquera chooses to omit. The statement about wind-eggs forms part of Aristotle's argumentation that it is the female which contributes the material to the embryo and the male which endows it with form. Ibn Rushd subscribes to this conclusion, which is taken over in turn by Falaquera. However, Ibn Rushd's position differs from that of Aristotle in that he explicitly states that the sperm of the female is active in generation (namely by contributing matter). It is evident that it is Galenic influence which is at work here.

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116 *De generatione animalium* 726a26–30.
117 Ibid., 727b35–728a9, cf. also 739a20–26.
118 Ibid. 737a27–29.
121 Aristotle presented this argument as a seneion (*De generatione animalium* 727b11, cf. 739a20).
124 *De generatione animalium* 729a34–730a35.
Ibn Rushd adopts more or less the same approach in his commentary on De animalibus. In this work, in which he discusses the issue of the female contribution to generation at great length, Ibn Rushd refutes Galen's arguments and sides with Aristotle. However, as he clearly could not deny the existence of the ovaries outright, since their existence had been commonly accepted since Galen, he incorporates this Galenic tenet in his own reinterpretation of Aristotle's view. Hence he concedes that the "female testes" are the same in shape as the male testes, but refuses to infer from this that they perform the same function. The discussion in this work throws light on his somewhat unclear statement in the Kulliyāt, according to which the breasts of men do not serve the same use as the breasts of women, a statement which is repeated by Falaquera. Apparently, what Ibn Rushd intends to convey here is that it should cause no amazement that the female testes (and consequently the female sperm) do not perform the same function in generation as their male counterparts, as Galen himself admitted that the breasts in males serve no specific use in generation. The implication is that there is no reason why a similar argument could not be made with regard to the female testes.

As has been said above, Falaquera pays more attention to Galen’s position than does Ibn Rushd in the Kulliyāt. By Galen’s time the existence of the ovaries (which had been unknown to Aristotle) had become a well-established fact. From this anatomical evidence Galen drew the conclusion that women, too, produce sperm and that this sperm contributes matter, form and the principle of movement to the embryo as the male testes do. However, Falaquera’s remark that Galen held these two sperms to be the same is not entirely correct, since Galen did in fact distinguish between them, saying that the female sperm is less perfect than that of the male both in quantity and in quality.

The fact that Falaquera quotes a rabbinic saying when presenting Galen’s view may indicate that he was prepared to assign a more active role to the female sperm than Ibn Rushd, who, it may be recalled, could not but acknowledge the existence of these female parts, but rejected Galen’s view with respect to their function. The Galenic theory that women emit their own sperm was well known in talmudic Judaism. In medieval times this Galenic view was generally considered to be consistent with the talmudic statement “if the woman emits her semen first she bears a male child; if the man emits his semen first she bears a female child,” which clearly supposes that both female and male sperm contribute to generation. Therefore, one gains the impression that Falaquera, while following Ibn Rushd and thus siding with the commentator’s interpretation of Aristotle, at the same time also wants to take into account Galen’s view which is in accordance with that of the rabbis.

11. Origin of Smell (14v)

According to Aristotle smell resides in the passages of the nose [naris], but Galen thinks that it is situated in the anterior ventricles of the brain. He says that because of the distance of this place (from the nostrils), it is necessary to inhale the smell (to the brain). But if Galen were right, we would necessarily perceive the smell when we would close (our nose) and inhale the air with our mouth. However, we do not find this to be the case, namely, that we perceive the smell of the food when it begins to be digested in the stomach.

Commentary

This statement by Falaquera once again does not represent Falaquera’s own opinion, but has been derived from Ibn Rushd’s K. alkulliyāt. A comparison of the actual texts shows that although there are close parallels, some important elements have been omitted. Firstly, in his discussion of Galen’s opinion about the localization of smell in the anterior ventricles of the brain, Ibn Rushd adds: “in the

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120 MS Paris hebr. 9569, fol. 457r ff.
121 MS Paris hebr. 9569, fol. 458r.
125 See, for instance, Historia animalium 492b13–14.
126 Kulliyāt, ed. Vómeas Besteiro, p. 84.
two excrescences that are similar to the nipples of the breast."  

Secondly, the last part of the statement, namely, that if Galen were right we would be able to smell the food once it becomes digested in the stomach, does not reflect the opinion of Ibn Rushd but that of al-Fārābī, as quoted by Ibn Rushd.

12. Origin of Voluntary Movements (15r–v) According to Galen the place of these movements is the brain, from where they spread through the nerves to the whole body. But according to Aristotle, the brain serves the heart in this activity, just as it serves the senses insofar as it mediates them. According to Aristotle, the natural heat originates in the heart. We can explain this in a different way. When someone is walking, a natural heat spreads through his body which was not there before and the organ through which this heat spreads through his whole body is the heart without any doubt.

Commentary These remarks are part of a long section entitled "On the Usefulness of the Organs of Voluntary Motion," which Falaquera has taken literally from Ibn Rushd's K. al-kulliyāt, with one notable exception: Ibn Rushd did not state that "the place of these movements is the brain" but "the place of this heat is the brain." Keenly aware of the fact that the controversy between Galen and Aristotle is not about the origin of the natural heat, in which Galen followed Aristotle's theory that it originates from the heart, but about the origin of voluntary motion, Falaquera has modified Ibn Rushd's statement accordingly. Galen indeed held the brain to be the origin of voluntary motion, as the following statement clearly shows: "Now the encephalon needs no muscles whatever for any purpose because it is itself the source of voluntary motion for all the other parts." And in his De motu animalium, Aristotle remarks that both the origin of voluntary movement and of the innate spirit (heat) are situated in the heart.

According to Ibn Rushd's theory the force that makes animals move is the appetitive force when it is preceded by imagination and then followed by consent (ijma'). Movement can be divided into voluntary and involuntary movement. Voluntary movement of a man's limbs originates from more than one cause. For instance, the movement of the hand is caused by the tendon, that of the tendon is caused by the muscle, that of the muscle is caused by the nerve, and that of the nerve can be either autonomous or caused by something else. Every body in the natural world that moves something else is itself moved as well. Consequently, there must be one ultimate mover that is not a body, for if it were another body there would be a regressus ad infinitum. This inanimate mover is the imaginative faculty combined with the appetitive faculty and consent. This faculty is transported by the "natural heat" from the heart to the different muscles, as is clear from the fact that if one's limbs become cold they cannot move anymore.

13. Inhalation (fols. 15v–16r) Falaquera's statement on the controversy between Aristotle and Galen concerning major elements of inhalation is derived literally from Ibn Rushd's K. al-kulliyāt. Since this subject has been dealt with exhaustively by Bürgel, reference to his fundamental work will suffice.

134 I.e., the olfactory lobes. Galen locates it "in the tips (єν τοις ίσαλαν) of the anterior ventricles of the brain" (De placitis Hippocratis et Platonis 7.6).


137 See Bürgel, Averroes, pp. 294–295.


139 As May remarks (op. cit., p. 52): "All that Galen has to say of the innate natural heat clearly reflects the influence of Hippocrates and Aristotle;" see ibid., pp. 50–53 for an extensive discussion; see as well Bürgel, Averroes, p. 295, n. 1.

140 See De usu partium 7.21, ed. Helmreich, op. cit., 1:346; May, Galen on the Usefulness, 1:379; see as well De placitis Hippocratis et Platonis 1, ed. de Lacy, op. cit., pp. 66–82.

141 De motu animalium 713a12–14.

142 Although the concept of ijma' features in Ibn Sīnā's psychology as a faculty subordinated to the 'aql 'amali (see Bürgel, Averroes, p. 294, n. 3), we have adopted Bürgel's suggestion that it may be related to the Stoic idea of oμώνης οικογένειας (a)ινομίας, ζωτικόν), hence our translation "consent."

143 Ibn Rushd's theory of movement is derived from Aristotle as it features in Movement of Animals 9–11.

Summary

In his description of the medico-philosophical controversies between Aristotle and Galen, Nathan b. Yo'el Falaquera drew primarily on Ibn Rushd's *K. al-kulliyāt*, which he often quoted literally, although at times in somewhat abridged form. Other sources used by the author of the *Sefer Ṣorit ha-Guf* are Ibn Rushd's commentaries on Aristotle's *De Animalibus* and Galen's *De temperamentis*, and possibly also Ibn Sīnā's *K. al-Qānūn*. Moreover, he consulted a commentary on one of Galen's works by a certain 'Ali who is perhaps identical with 'Ali ibn Riḍwān. Falaquera's account generally reflects Ibn Rushd's approach of harmonizing the divergent views of Aristotle and Galen and his reinterpretation of Aristotle's opinions in light of Galenic doctrine. Occasionally, however, he deviates from this procedure by adducing another source, for example in his discussion of the controversy about the ovaries where he refers to a talmudic saying.