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The Humours and the Dyes

A New Witness to the Arabic Tradition of Galenic Summaries on Urine

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Abstract

This contribution presents the edition and translation of a new manuscript witness to the Arabic tradition of Galenic summaries *On urine* (MS Collegesville, Minnesota HMML OLM 00041). Uroscopy appears to be a complementary diagnostic element in ancient medicine, which gained increasing popularity in later centuries, as attested by the rich traditions in Greek and Arabic. The summary, as attested in this manuscript witness, compares the four bodily humours to dyes, creating a concrete and tangible frame for the study and memorization of this diagnostic branch. This text, moreover, stresses the performative dimension of uroscopy, particularly in the form of instructions for physicians on how to recognize devious fake samples offered by obnoxious people seeking to test the physician in order to undermine his authority and credibility.

Keywords

Galenic summaries – uroscopy – Arabic manuscripts – dyes

The late antique Alexandrian scholars selected sixteen works from the Galenic corpus, defining a canon that could serve as a complete introduction to the

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art of medicine.[1] These selected works were abridged and schematized for teaching purposes and these summaries are known as *Summaria Alexandrinorum*.[2] These materials entered the Arabo-Islamic tradition in the *floruit* of the Graeco-Arabic translation movement, and the Arabic manuscript tradition preserves a considerable number of Galenic summaries (Ar. *ǧawāmiʿ*).[3] As Emilie Savage-Smith remarked, the list of *ǧawāmiʿ* in Ḥunayn ibn Isḥāq's *Risāla* shows how the majority of them focuses on works that are not included in the Alexandrian canon.[4] The authorship or translation of these summaries is frequently attributed to Ḥunayn ibn Isḥāq himself (d. 910), and sometimes to the elusive Yaḥyā al-Naḥwī (literally, John the Grammarian, often identified with the late antique Alexandrian scholar Johannes Philoponos, ca. 490–575 CE)[5] or, as in this case, they simply remain unmentioned.

The observation of urine constituted an important mean of diagnosis and prognosis already in the Hippocratic corpus. Galen disseminated his own works—not only his commentaries on Hippocratic works—with observations and remarks about uroscopy. The nineteenth volume of the Kühn edition contains three different works on urine ascribed to Galen (*De urinis*, *Compendium de urinis*, *De urinis ex Hippocrate Galeno aliisque quibusdam*), though these were not considered genuine already in late antiquity. Though not included in Kühn's edition, a fourth pseudo-Galenic treatise, conventionally entitled *De signis ex urinis*, should be added to this number.[6] These treatises can be plausi-

1 See A.Z. Iskandar, "An Attempted Reconstruction of the Late Alexandrian Medical Curriculum," *Medical History* 20 (1976): 235–258; Manfred Ullmann, *Medizin im Islam* (Leiden: Brill, 1970), 65–67; Fuat Sezgin, *Geschichte des arabischen Schrifttums*, vol. 3 (Leiden: Brill, 1970), 141–150.

2 For a summary of the large body of literature on this subject, see Vivian Nutton, "Summaria Alexandrinorum," in *Brill's New Pauly*, ed. Hubert Cancik and Helmuth Schneider (Antiquity) and Manfred Landfester (Classical Tradition); English translation ed. Christine F. Salazar (Antiquity) and Francis G. Gentry (Classical Tradition), http://dx.doi.org/10.1163/1574-9347_bnp_e1125980, accessed April 2, 2021.

3 See Emilie Savage-Smith, "Galen's Lost Ophthalmology and the 'Summaria Alexandrinorum'," *Bulletin of the Institute of Classical Studies* 77 (2002): 127–128.

4 See Savage-Smith, "Lost Ophthalmology," 128–131. See also the description of the same author in the online catalogue of the Islamic Medical Manuscripts at the National Library of Medicine, https://www.nlm.nih.gov/hmd/arabic/alexandrian.html, accessed March 27, 2022. See also John C. Lamoreaux, *Ḥunayn ibn Isḥāq on His Galen Translations: A Parallel English-Arabic Text* (Provo, UT: Brigham Young University Press, 2016).

5 See Robert Wisnovsky, "Yaḥyā al-Naḥwī," in *Encyclopaedia of Islam, Second Edition*, ed. P. Bearman, Th. Bianquis, C.E. Bosworth, E. van Donzel, W.P. Heinrichs, http://dx.doi.org/10.1163/1573-3912_islam_SIM_7961, accessed November 24, 2022.

6 See Carl G. Kühn, *Claudii Galeni Opera Omnia*, 20 vols. in 22 (Leipzig: Knobloch, 1821–1833), vol. 19, 529–573. In particular, the Kühn edition includes three pseudo-Galenic treatises: *De*

bly ascribed to late antique authors, who condensed the semiotic lore dealing with the analysis of urines, building it on a collection of quotations and literary elaborations from ancient authors. In the period between the 4th and the 10th century, uroscopy became an important topic in late antique and Byzantine medical literature. The *De urinis*, for instance, is attributed to the Alexandrian scholar Magnus of Emesa (mid-4th cent.), while Stephanos of Athens (551–558) composed another treatise on uroscopy, several passages of which echo the *De urinis*. Between the 9th and 10th century, Theophilos Protospatarios composed the text that would become the literary archetype for byzantine uroscopy, stating explicitly that no exhaustive treatise on the topic had been composed in antiquity,[7] as remarked a few centuries later by John Aktouarios (14th cent.).[8] The Byzantine tradition, in this as in many other fields of technical knowledge, was in dialogue with the Arabic one and the Pseudo-Avicenna clearly witnesses to this exchange, as well as to the general fluidity that characterizes the movement of text blocks within the tradition of uroscopy.[9]

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urinis (vol. 19, 574–601), *De urinis compendium* (vol. 19, 602–608), and the *De urinis ex Hippocrate* (vol. 19, 609–628). There is a fourth pseudo-Galenic treatise on urine, *De signis ex urinis*, which has not been included by Kühn in his edition, see Paul Moraux, "Anecdota Graeca Minora VI: Pseudo-Galen, *De signis ex urinis*," *Zeitschrift für Papyrologie und Epigraphik* 60 (1985): 63–74. See also Caroline Petit, "Four Works on Prognostic Attributed to Galen (Kühn vol. 19): New Hypotheses on Their Authorship, Transmission, and Intellectual Milieu," in *Pseudo-Galenica. The Formation of the Galenic Corpus from Antiquity to the Renaissance*, ed. Caroline Petit, Simon Swain, and Klaus-Dietrich Fischer (London: The Warburg Institute, 2021), 69–82; and Vito Lorusso, "Il trattato pseudo-galenico *De Urinis* del Parisin. Suppl. Gr. 634," *Bollettino dei classici* 25 (2004): 5–43.

7 In the proem to his work, Theophilos Protospatarios remarked that a comprehensive study on the subject was not yet available, although uroscopy had been studied already by Hippocrates, followed by Galen and Magnus. See Julius L. Ideler, *Physici et medici graeci minores*, 2 vols. (Berlin: Reimer, 1841–1842), vol. 2, 261–262; for the translation, see Luciana Rita Angeletti, Berenice Cavarra, and Valentina Gazzaniga, *Il De urinis di Teofilo Protospatario: centralità di un segno clinico* (Roma: Università La Sapienza, 2009), 101–102 (Italian translation) and 255–256 (English translation).

8 For the edition of the Greek text of John Aktouarios, see Ideler, *Physici et medici graeci minores*, vol. 2, 4–5. See also Lorusso, "Il trattato pseudogalenico *De Urinis*," 13–14; Petit, "Four Works on Prognostic," 13–14; Petros Bouras-Vallianatos, *Innovation in Byzantine Medicine: The Writings of John Aktouarios (c. 1274–c. 1330)* (Oxford: Oxford University Press, 2020), 39–43; see also Giovanni Attuario, *L'eccellente trattato sulle urine di Avicenna. Introduzione, testo critico, traduzione e note al testo: a cura di Mario Lamagna* (Cuenca: Ediciones de la Universidad de Castilla-La Mancha, 2017); and Mario Lamagna (with Luigi Iorio), "Byzantine Doctrines on Uroscopy in the *Liber Orinalibus* of Hermogenes (codex 69 Montecassino)," *Journal of Nephrology* 24, Suppl. 17 (2011), S103–107.

9 Mario Lamagna has extensively studied this text and published several contributions on the subject, see Mario Lamagna, "Per l'edizione del *De urinis* attribuito ad Avicenna: studio

The Arabic summaries of Galen's *De urinis* represent a particularly rich textual vein, not only in terms of the number of witnesses, but with respect to the variety of graphic layout solutions and the presence of different versions. Emilie Savage-Smith made a survey of the extant manuscript witnesses and, apart from the existence of two different versions, she highlighted the use of tree diagrams and the drawings of urine flasks in several manuscripts.[10]

The new manuscript witness that can be added to the count has been made available in the digital reading room of the Hill Museum and Manuscript Library (HMML) in Minnesota.[11] The physical artifact remains *in situ*, that is in

complessivo della tradizione manoscritta," *Revue d'Histoire des Textes* 6 (2011): 27–59; id., "La recensio amplior del *De urinis* di Avicenna: lo stato della tradizione manoscritta," in *Ecdotica e ricezione dei testi medici greci. Atti del V Convegno Internazionale* (*Napoli 1–2 ottobre 2004*), ed. Véronique Boudon-Millot et al. (Napoli: M. D'Auria Editore, 2006), 321–333; id., "La recensio amplior inedita del *De urinis* di Avicenna," in *Trasmissione e ecdotica dei testi medici greci. Atti del IV Convegno Internazionale* (*Parigi 17–19 maggio 2001*), ed. Antonio Garzya and Jacques Jouanna (Napoli: M. D'Auria editore, 2003), 271–280. For a broad historical overview of uroscopy in the Middle Ages, see Laurence Moulinier-Brogi, "Examination of Urine in Medieval Medicine in the Islamic and Western Worlds. A Short Overview," *Médiévales* 70 (2016): 25–41.

10 The extant Greek manuscript tradition witnesses to the use of visual logical tools to display the contents already in late antiquity, see Beate Gundert, "Die *Tabulae vindobonenses* als Zeugnis alexandrinischer Lehrtätigkeit um 600 n. Chr.," in *Text and Tradition: Studies in Ancient Medicine and Its Transmission, Presented to Jutta Kollesch*, ed. Klaus-Dietrich Fischer, Diethard Nickel, and Paul Potter (Leiden: Brill, 1998), 91–144; and Oliver Overwien, *Medizinische Lehrwerke aus dem spätantiken Alexandria. Die* Tabulae Vindobonenses *und* Summaria Alexandrinorum *zu Galens* De Sectis (Berlin: De Gruyter, 2009). For a list of manuscript witnesses preserving the Arabic versions of the Galenic summary *On Urine*, see Savage-Smith, "Lost Ophthalmology," 130–131. As for the use of rectangular tables and tree diagrams in the Arabic tradition, see Lucia Raggetti, "Simples on the Trees or Medicines on the Table? A Synopsis of Galenic Pharmacology in MS Bodleian Huntington 600," *Archives Internationales d'Histoire des Sciences* 70 (2020): 152–175; and ead., "Simple Tables: A Note on Pharmacology in Rows and Columns," in *Nell'Officina del Filologo. Studi sui testi e i loro lettori*, ed. Tommaso Raiola and Amneris Roselli (Pisa-Roma: Fabrizio Serra Editore, 2022), 129–138.

11 This institution that has been extremely active in the preservation and digitization of Near-Eastern and African manuscripts from a variety of linguistic and cultural traditions. The manuscript entered the HMML digital collection with the project number OLM 00041 and is fully available online. For the digital images, see https://w3id.org/vhmml/readingRoom/view/507539, accessed November 23, 2022. A first description was presented by Ms Panagiota Mikropandremenou as part of the course "Introduction to Arabic Manuscript Studies" offered by the HMML in 2021, in which I participated as guest instructor. The association between a Galenic summary on uroscopy and Paracelsian medicine is also attested in at least another multiple-text manuscripts, MS Teheran Mağlis al-Šawarī al-Islāmī 6392/2, pp. 357–361.

the collection of the Lebanese Maronite Order in Kaslik. A note on the recto of the first leaf states that the manuscript was copied in the year 1232 H., also given as the Christian year 1816. This is a multiple-text manuscript—probably a composite one—containing a variety of medical works, and the Galenic summary on urine finds place among mediaeval works (such as Ibn al-Tilmīḏ, 12th century) and the Arabic translations of Paracelsus and other European authors:[12]

f. 2r–4v, *Fihris al-kitāb fī ḥadd al-ṭibb wa-l-umūr al-ṭabīʿiyya* ("Index of the book about the extent of medicine and the natural issues")
[f. 4r–7r, blank leaves]
f. 7v–69v, *Kitāb muḫtaṣar al-iqtiḍāb* (*taṣnīf Abī Ḫayr al-Isrāʾīlī*), dated 1232 H/1817 CE (Abridgement of the *Kitāb intiḫāb al-iqtiḍāb* by Ibn al-Masīḥī).
f. 70r–80v, *Fī ǧawāmiʿ mā qāla Ǧālīnūs fī-l-bawl* ("Summary of what Galen said on urine")
f. 81r–84v, *Min kitāb al-asrār li-Yūḥannā al-Inklīzī fī-l-ṭibb* ("From the book of John the English on medicine")
[f. 85r–86v, blank leaves]
f. 87r–98r *Kitāb al-zubda al-ṭibbiyya fī ʿilm al-amrāḍ al-kulliyya wa-asbābihā wa-mudāwātihā* ("Book of the best medical notions about the general knowledge of diseases, their causes, and their therapies," by Ibn al-Tilmīḏ)
[f. 98v–102v, blank leaves]
f. 103r–122r, Acephalus text on the influence of planets and constellations on the human body and health
[f. 122v–123v, blank leaves]
f. 124r–126v, *Fihris al-kitāb al-ǧadīd al-kīmiyāʾī* (Index of the book "The new chemical [medicine]")
[f. 126r–126v, blank leaves]
f. 127r–169r, *Kitāb al-ṭibb al-ǧadīd al-kīmiyāʾī allaḏī iḫtaraʿahū Barākilsūs* ("Book of the new chemical medicine invented by Paracelsus")

The text of the Galenic summary on urines preserved in this multiple-text manuscript suggests that the Arabic tradition adopted criteria of examination already attested in antique and late-antique medical literature (e.g. colour, consistency, sediment and the area of the flask where it appears, age of the patient,

12 A table of contents was written in the doublure of the front cover by the same hand that produced the note on f. 1r.

digestion),[13] apparently declined in a peculiar fashion. Until a complete *recensio* of the Arabic manuscript tradition has been carried out, however, it is difficult to draw a general picture and to define the position of this manuscript in the medical and textual tradition. The edition and translation of this new witness represents the first step towards a complete overview of the tradition of the Arabic summaries on urine.[14]

This summary is introduced by a discussion on the four primary qualities, in particular hot and cold, with their natural association, respectively, to dry and moist, followed by the natural directions of movement that determine the generation of the four elements. In turn, the four primary qualities are associated with a colour (red, white, yellow, and dingy colour) and a physical characteristic (how light, heavy frothy, and thin it is), whereas each of the four humours is associated with a different vegetal dye: safflower, saffron, soapwort, and turnsole.[15] This frame of analysis is summarized in one of the few tree diagrams attested in this witness.[16] The association between the four humours and the vegetal dyes becomes the model to explain—and memorize—the origin of the six different colours that urine may assume: purple, saffron, white, black, leek, and citrus. Moreover, the parallel with dyes helps explain the chromatic changes that urine undergoes with the passing of time. Starting with the six ideal samples of colour, each paragraph focuses on a certain feature or kind of urine and is accompanied by the drawing of a flask. Probably more for layout

13 As an example of the different colours of urine described by Byzantine authors, Theophilos mentioned twenty different nuances (beautifully depicted in MS Bologna BUB 3632, f. 51r), whereas John Aktouarios names nine. See Bouras-Vallianatos, *Innovation in Byzantine Medicine*, 42–43 and 59–62. For a detailed description of the chromatic elements in pseudo-Galenic *De Urinis*, see Alain Touwaide, "Pseudo-Galen's *De Urinis*: A Multifactorial Technique of Diagnosis and a Cultural Interpretation of Color," *American Journal of Nephrology* 22 (2002): 130–135. The translation of the complete text is not preserved in Arabic, for its summary see also Ullmann, *Medizin*, 44–45 (no. 36).

14 As for the edition of the Arabic texts, I have opted for making it available to a broader scholarly audience, largely by adapting the orthography to modern conventions (i.e. orthography of the hamza, *yā'*/*alif maqṣūra*, dots on the *tā' marbūṭa*). The only noteworthy feature in the orthography that has been changed in the edition is a tendency of the copyist to substitute *ṭā'* with *tā'*, e.g. in the words *kurrāṭ* (and the related adjective *kurrāṭī*) and *makṭ*. In the edition, rubrications are conveyed by bold type.

15 Turnsole (*Chrozophora tinctoria*) is proposed here as identification for the *kudām* plant. This plant, in fact, produces a blue-purple dye and this was used as substitute for purple.

16 A tree diagram implies an overarching concept from which stem specific subdivisions, in the number required by the case and with the possibility to arrange them in more than one syntactic level. In this respect, the graphic display of the five kinds of urine on f. 73v is more of a numbered list with a peculiar layout than a tree diagram.

reasons than for a realistic impression, the flasks lean horizontally and sport written labels indicating the colour or the presence of residues and froth at a certain level of the flask. It has to be remarked that the kind of uroscopy presented in this treatise only lives in a visual dimension, completely lacking the olfactive one.

The characterization of different kinds of urine proceeds with its five natures, one for each age of a man's life (childhood, youth, adult, and old age) along with that of women.[17] Women's urine may, in turn, be simply plain or witness to sexual intercourse or pregnancy, even revealing whether she is a primigravida or not. The stages of disease and digestion that may be revealed by urine are assimilated in the text. Another meaningful element for the physician to observe is the "cloud"—or suspension—and the foam that floats in it, along with their position inside the flask.[18]

The text adds to this material an empirical dimension with a description of the correct way of receiving, holding, and handling a flask for examination. This introduces a performative component to medical practice, with the physician bound to making a public display of his knowledge.[19] The physician must also know what the urine of the most common domestic animals looks like (cattle, goat, horse, donkey, camel), and be able to recognize artificial urine (saffron water and ginger, honey and water, chaff water) in order to avoid the professional ambushes of annoying people. If the space devoted to this topic in the summary is to be taken as measure of the social phenomenon, it must have been a fairly common predicament for a Galenic physician to be offered devious samples. The physician's prowess in deducing a patient's condition from the examination of his or her urine—or the charlatan's ability

17 In the pseudo-Galenic works on urine, the references to age remain circumstantial. A more systematic approach can be observed in John Aktouarios (*De urinis*, 11 5), see Ideler, *Physici et medici graeci minores*, 36–37.

18 The suspension was called 'cloud' (*nephelē*) also in the Greek tradition of uroscopy and is attested as early as the Hippocratic corpus, see Bouras-Vallianatos, *Innovation in Byzantine Medicine*, 40. For the role of foam and froth in the Greek medicine and its interpretation through the eyes of a contemporary physicians, see Luigi Iorio and Mario Lamagna, "La schiuma nelle urine: da Ippocrate alla scuola medica di Salerno," *Giornale Italiano di Nefrologia* 31, no. 2 (2014): 1–8.

19 Peter Pormann explored how physicians belonging to the medical elite demarcated themselves from the practices of charlatans in the medical marketplace by painting a negative picture of their routines, see Peter Pormann, "The Physician and the Other: Images of the Charlatan in Medieval Islam," *Bulletin of the History of Medicine* 79, no. 2 (2005): 189–227. For the construction of more elaborated narratives based on patient history and physician performance, see Bouras-Vallianatos, *Innovation in Byzantine Medicine*, 69–104, that also offers a detailed bibliographical overview on the subject.

to imitate this professional behaviour—is a *topos* in many literary anecdotes and stories as well.[20]

The text goes on to illustrate the characteristics connected to different fevers. Only in the group of samples associated with fevers it is possible to find prognostics about the duration and final outcome of the disease. The last group of samples illustrates the aspect of urine in the case of widespread diseases, such as an internal complaint, joint pains, cough, and epilepsy. The summary concludes with some examples of rectifications to wrongly formulated technical statements and suggests how to rebuke incorrect opinions concerning, for instance, the most suitable moment to collect the sample and the opportunity to analyze the urine of children.

MS Collegesville, Minnesota HMML OLM 00041, ff. 70r–80v—Arabic Text

[أ٧٠] **بسم الله الحي الازلي السرمدي القيوم وبه تقتي وعليه اعتمادي**

في جوامع ما قاله جالينوس في البول

ان الأشياء التي يتم بها كون الانسان ثلاثة وكلها حارة وهذه **الدم الروح المني**

وهي في الصبيان كثيرة المقدار وكذلك قال ابقراط ان الحرارة الطبيعية في الصبيان كثيرة جدا

وفي الشباب معتدلة المقدار

في الشيوخ قليلة المقدار فابد انهم باردة يابسة

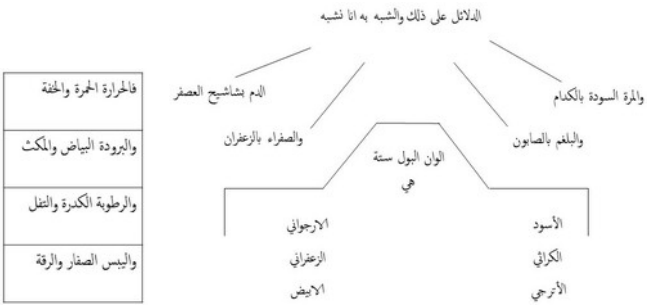
[ب٧٠] **الشيء اللطيف في البدن احد ثلاثة أشياء**

اما **الروح** وهذا في غاية اللطافة واما **بخار** رطب وهذا وسط فيما بين الروح والدم اللطيف واما **دم** لطيف وهذا اقل لطافة من الجميع

يقال ان يكون من الطبائع فعل ومن الفعل حركة ومن الحركة حرارة ثم يتفع اثر تلك الحركة سكون فكان من السكون برد فصارت الحرارة علوا والبرد سفلا

20 See, for instance, Philip F. Kennedy, "The Rational, Irrational, and Recognition: *Firāsah*, Detection, and the Uncanny Atavism of Kinship in some Medieval Arabic Narratives," in *Arabic Belles Lettres*, ed. Joseph E. Lowry and Shawkat M. Toorawa (Atlanta, GA: Lockwood Press, 2019), 64; see also "The Weaver Who Became Physician by his Wife's Commandment," John Payne, *Tales from the Arabic: Of the Breslau and Calcutta (1814–1818) editions of The Book of the Thousand Nights and One Night not occurring in the other printed texts of the work, Now first done into English* (1901), II, 21. The story is also included in other collections of popular stories, such as the *One Hundred and One Nights*, see MS Berlin We 662, 48v–50r.

ثم ان الحركة قد مالت عن البرودة فسخنتها وعرقت البرودة وسالت منها الرطوبة
ثم ان الحرارة جففت تلك الرطوبة فصار مكان عدم الرطوبة يبس فلذلك صار حار رطب وبارد يابس
فالأعلى حار رطب والاسفل بارد يابس
ثم زاوجت الحرارة علوا واليبس هابطا فتولد منها النار
ثم زاوجت الرطوبة علوا لبرودةٍ فتولد منها الماء فلذلك صار النار والهواء صاعدين والماء والأرض هابطين ولكل واحد من هذه الطبائع لون ومرتبة [٧١أ]



F. 71R (A) F. 71R (B)

فالحرارة الحمرة والخفة
والبرودة البياض والمكث
والرطوبة الكدرة والثفل
واليبس الصفار والرقة

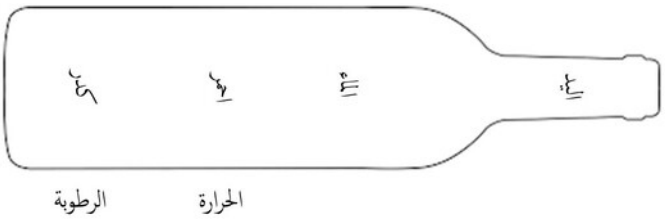
الدلائل على ذلك والشبه به انا نشبه

والمرة السودة بالكدام — الدم بشاشيح العصفر
والبلغم بالصابون — والصفراء بالزعفران

الوان البول ستة هي

الأسود	الارجواني
الكراثي	الزعفراني
الأترجي	الابيض

فمن ذلك اذا رأيت البول احمر كدرا فالغالب على صاحبه الدم اما حمرته فدالت على الحرارة واما كدورته فدالت على الرطوبة وكذلك الدم حار رطب شكل ذلك الاناء

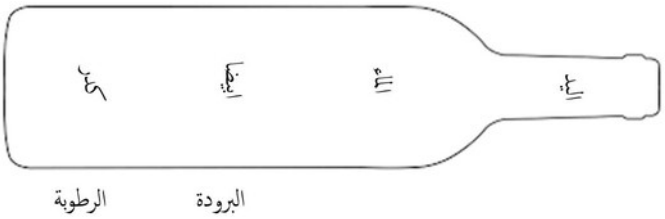


F. 71R (C)

[ب٧١] واذا رأيت البول احمر صافيا رقيقا فان الغالب على صاحبه المرة الصفراء اما حمرته فدالت على الحرارة واما صفاوته ورقته فدالان على اليبس وكذلك الصفراء حارة يابسة شكل هذا الاناء

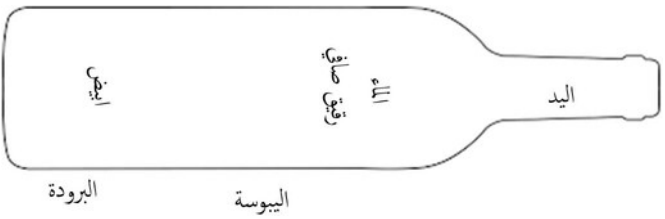
F. 71V (A)

وإذا رأيت ابيضا كدرا فالغالب على صاحبه البلغم اما بياضة دال على البرودة واما كدورته فدالت على الرطوبة وكذلك البلغم بارد رطب شكل ذلك الاناء



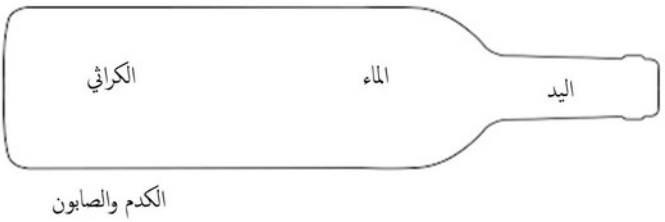
F. 71V (B)

واذا رأيت البول ابيضا صافيا رقيقا فان الغالب على صاحبه المرة السوداء اما **بياضه** فدال على البرودة واما **صفاؤه** دال على اليبس وكذلك المرة السوداء باردة يابسة [أ72] شكل ذلك الاناء



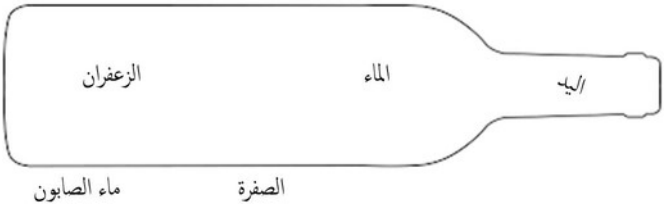
F. 72R (A)

فمازجت الطبائع والعلل والامراض والدلائل على ذلك فمتى خلطت كداما بماء الصابون صار لونه الكرات كذلك السوداء اذا خالطت البلغم صار لون البول لون الكرات شكل ذلك الاناء



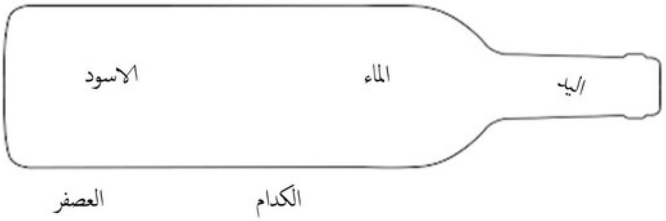
F. 72R (B)

واذا خلطت صفرة بماء الصابون صار لون الزعفران كذلك الصفراء اذا خلطت البلغم صار لون البول لون الزعفران شكل ذلك الاناء



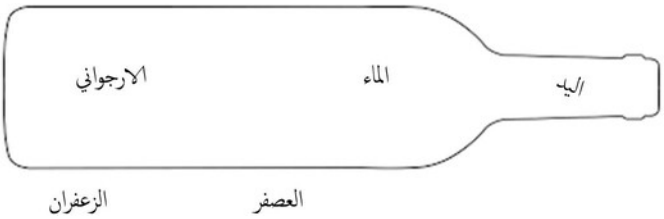
F. 72R (C)

[ب٧٢] واذا خلطت الكدام بالعصفر صار اسود الى الحمرة كذلك المرة السوداء اذا خلطت الدم صار لون البول اسود شكل ذلك الاناء



F. 72V (A)

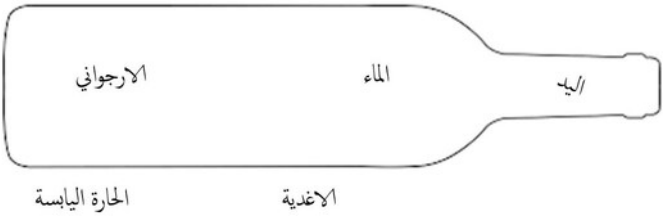
واذا خلطت الزعفران بالعصفر صار لون الارجوان وهو خلوقي شكل ذلك الاناء



F. 72V (B)

فاذ قال القائل لون المرة الصفراء احمر بسبب الحرارة ولون الدم احمر فهذا الحمرة في حمرة الاناء اجبنا فان حمرة العصفر بمنزلة حمرة الزعفران فاذا انحل صار اصفر كذلك الصفرة اذا ظهرت الى خارج اصفر كما قيل في لون الكراث اذا قيل انه من السوداء والصفراء لأنك اذا خلطت [٧٣أ] صفرة بسوداء صار لونا كراثيا

قلنا له ان الكدام اذا غمس فيه ثوب اخضر فاذا مكث فيه اسود كذلك المرة السوداء اذا اثرنا ثوب باثر زعفران صار لون الأترج كذلك البول اذا مر بحرارة المرة علق بصفرتها ومن الاغدية الحارة اليابسة ونقصان البلغم فصار لون الأترج وهو الطبيعي. شكل ذلك الاناء

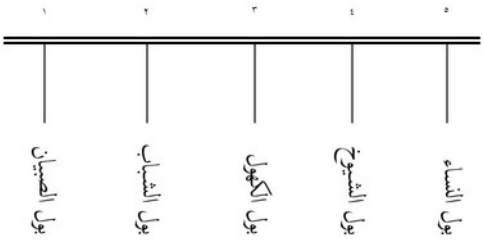


F. 73R (A)

اذا خلط المزاج شيئا من الاغدية الباردة الرطبة في وقت من الأوقات وكانت الصفرة يسيرة البغلم اقوى كان لون البول ابيض وهو أيضا طبيعي شكل ذلك الاناء

F. 73R (B)

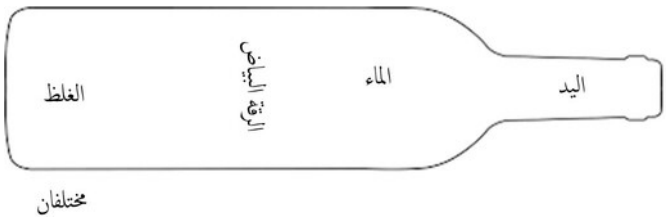
[ب٧٣] البول ينقسم على خمسة طبائع من ذلك



F. 73V (A)

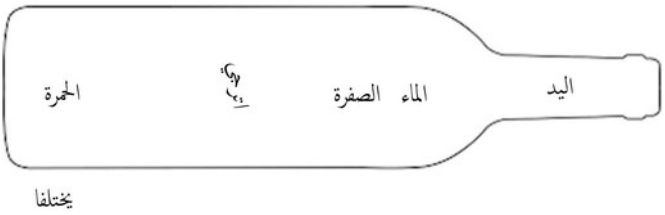
١ بول الصبيان
٢ بول الشباب
٣ بول الكهول
٤ بول الشيوخ
٥ بول النساء

بول الصبيان ابيض غير انه يختلف في الرقة والغلظ يشبه اختلاف غدا الصبي هذا الشكل الاناء



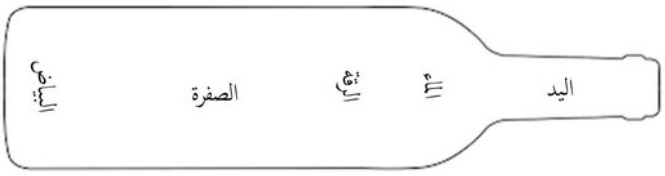
F. 73V (B)

بول الشباب يشبه لون الاترج يختلف في الحمرة والصفرة شكل ذلك الاناء



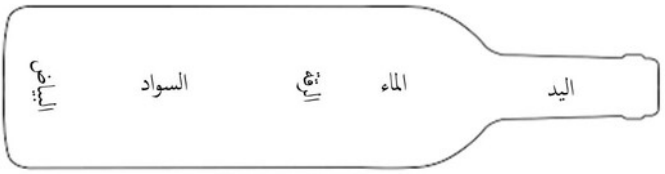
F. 73V (C)

[٧٤أ] بول الكهول ابيض فيه رقة لا يختلف فيه شيء من صفرة شكل ذلك الاناء



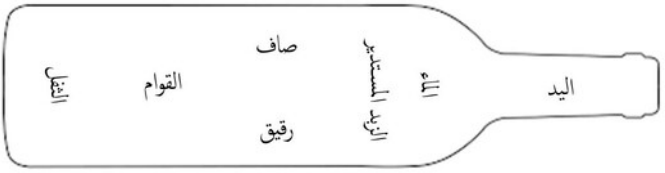
F. 74R (A)

بول الشيوخ يشبه بول الصبيان. الا انه الى سواد ماء هو شكل ذلك الاناء



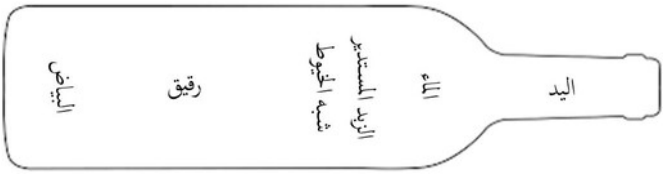
F. 74R (B)

بول النساء اشد بياضا من بول الرجال. وهو رقيق مائل الى الصفاء ماؤه وقوامه منحدر الى اسفل الاناء وثفله الى البياض واذا حركته لم يتعكر وعلى رأس الاناء زبد مستدير شكل ذلك الاناء



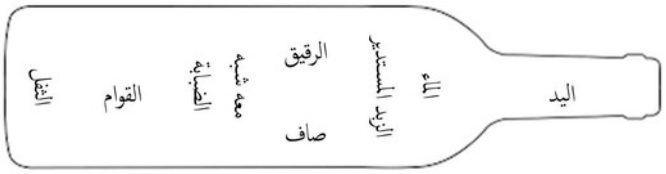
F. 74R (C)

[ب٧٤] وان كان مع الزبد شبه الخيوط. فهو ماء على اثر جماع شكل ذلك الاناء



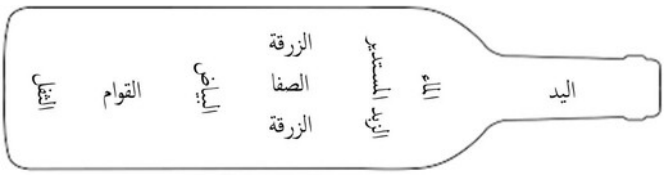
F. 74V (A)

واذا كان عليه شبه البياض مع صفا البول. فانه بول امراة حبلي شكل ذلك الاناء



F. 74V (B)

وان كان فيه شبه الزرقة فان يدل على انه اول الحبل وان لم يكن فيه زرقة فانه اخر الحبل شكل ذلك الاناء



F. 74V (C)

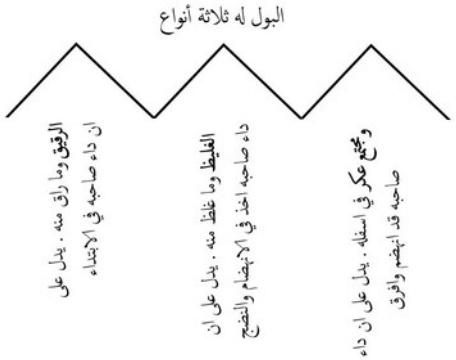
[أ٧٥] البول له ثلاثة أنواع

الرقيق وما راق منه. يدل على ان داء صاحبه في الابتداء

الغليظ وما غلظ منه. يدل على ان داء صاحبه اخذ في الانهضام والنضج

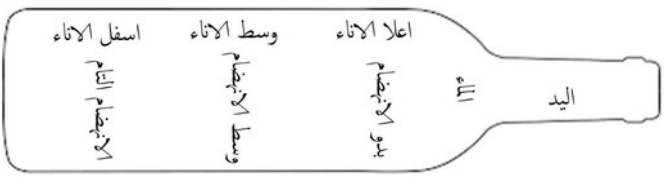
ومجتمع عكر في اسفله يدل على ان داء صاحبه قد انهضم وافرق

والثفل يكون في ثلاثة مواضع في الاناء شكل ذلك الاناء



F. 75R (A)

وانما تجتمع في الاناء هذه ثلاثة ترى منه اثنين **اما** اعلا ويدل على بدء الانهضام **واما** أوسط يدل على وسط الانهضام واما اسفل يدل على الانهضام التام ولهذا الثفل مدلولات عليها ويعرف بها



F. 75R (B)

[ب٧٥] فربما كان احمر ويدل على الحرارة
وربما كان ابيضا ويدل على البرودة
وكذا القوام هو السحابة اذا رأيتها في اعلا القارورة واقفة فأنها تدل على ان العلة واقفة وان كانت في وسط القارورة فأنها تدل على ان الطبيعة مجاهدة المراء الداء وان كانت منحدرة في الاناء دل ذلك على ان العلة قد غابت وقهرت القوة على الطبيب
هاهنا ان يستر الاناء عن الصفق ثم ينظر اليه لتتبين له السحابة ولا عليه شيء من امرها. ويجب على الطبيب أيضا ان ينظر الى الماء أولا وهو في اليد اليسرى فمن يريه إياها فانه امكن نظرا وابين بيانا واثبت تفهما لأنه اذا راه إياه بيده اليمنى كان اليد من يستره ولا يتمكن من النظر اليه لا سيما ان شاهد الطبيب البول من يد امرأة او انسان مستحي فهو بيده الشمال امكن فقيس على هذا واتقنه ان شاء الله تعالى

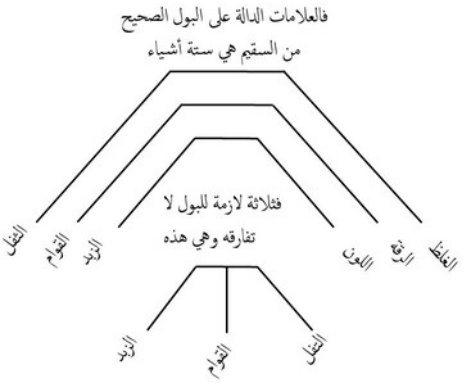
تمييز بول الانسان من بول البهائم

اعلم ان جهال الناس متعنتين لأهل العلم بصناعة الطب وفيهم من يحب ان يفهم المعاني والجهات التي تعرف بها تمييز بين البولين [أ٧٦] يعني بول البهيمة وبول الانسان فيغير عليهم البول بغيره فنحن نبين لك ذلك ونوضح الدلائل فيه بتلخيص مقنع ان شاء الله تعالى
فالعلامات الدالة على البول الصحيح من السقيم هي ستة أشياء

اللون	الثفل
الرقة	القوام
الغلظ	الزبد

فثلاثة لازمة للبول لا تفارقه وهي هذه

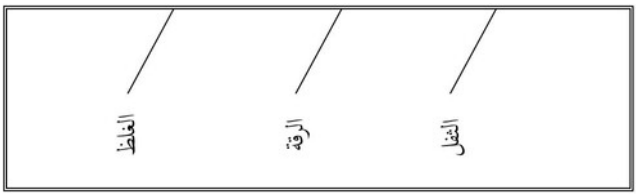
االثفل	القوام	الزبد



F. 76R (A)

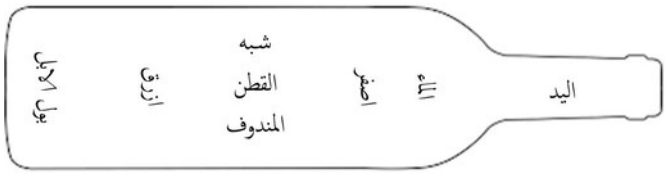
ولن يجتمع الثفل والقوام والزبد الا في البول وثلاثة يغشاه بعضها ويختلف في قدر مزاجها وهي العلامات التي يفرق بها بين بول الناس والبهائم

االلون الرقة الغلظ



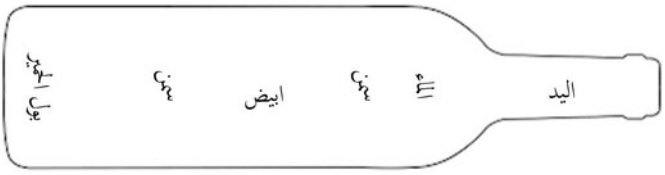
F. 76R (B)

[ب٧٦] بول الابل اصفر فيه شيء من زرقة وتراه في وسط الاناء قطنا منفوشا شكل ذلك الاناء



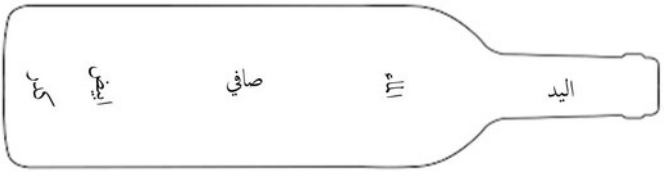
F. 76V (A)

بول الحمير كدر جدا الى البياض ماؤه وتراه كان الاناء مملؤا سمنا لا قوام فيه والاغبرة شكل ذلك الاناء



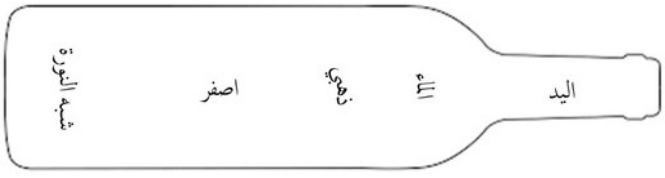
F. 76V (B)

بول الخيل اصفى من بول الحمير اشد بياضا غير انه في الاناء يبان كانه نصفين نصف صافي ونصف كدر الأعلى صافي والاسفل كدر شكل ذلك الاناء



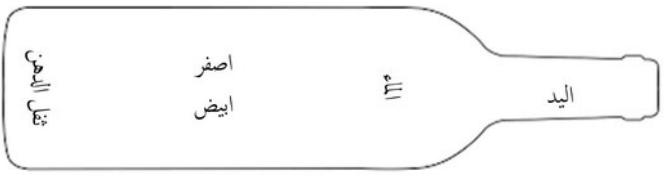
F. 76V (C)

[٧٧أ] بول البغال اصفر ذهبي متربعا في اسفله شبه ماء النورة شكل ذلك الاناء



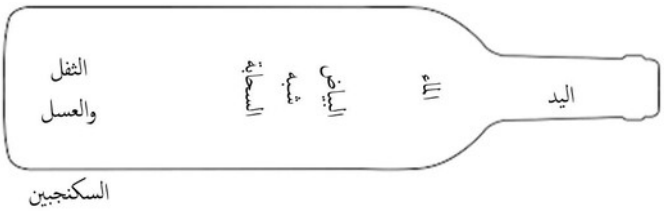
F. 77R (A)

بول الغنم ابيض فيه شيء من صفرة متغيرة في اللون على قدر غدا البهيمة وليس له قوام وثفله في اسفله بمنزلة ثفل الادهان شكل ذلك الاناء



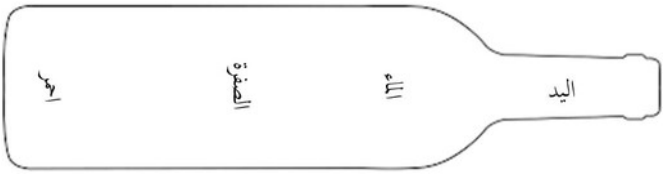
F. 77R (B)

ماء الزعفران والسكنجبين اذا خلطا كانا الى الصفرة والبياض ولم يكن لهما قوام ولا غبرة فاذا اشكلا عليك فارفع الاناء الى فوق وانظر اليه فانك ترى في اسفله شبه العسل الملتصق اسفل الشيء وفيه شبه السحابة والرغوان شكل ذلك الاناء



F. 77R (C)

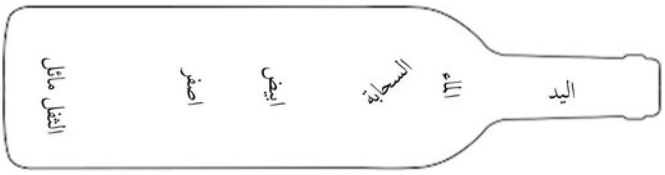
[ب٧٧] الماء والعسل وله زبد على لونه وزبد البول ابيض في جميع احواله والمواز وهو احمر مائل الى الصفرة شكل ذلك الاناء



F. 77V (A)

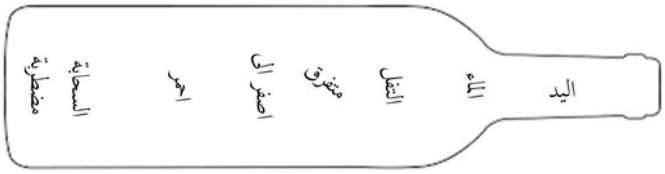
وماء التِبْن[21] له سحابة وثفل غير ثفله واقع في اسفله وسحابته كانها تذهب وتجئ وثفله فيه يتحرك شكل ذلك الاناء

21 Though the manuscript is not always reliable in the dotting, it clearly reads *mā' al-tibn*



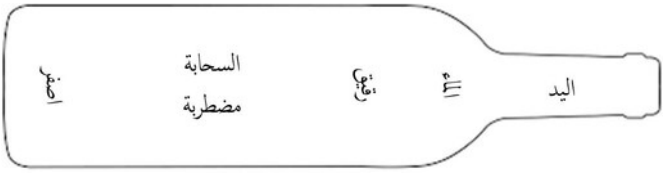
F. 77V (B)

علامة تدل على جميع ابوال الناس شكل ذلك الاناء



F. 77V (C)

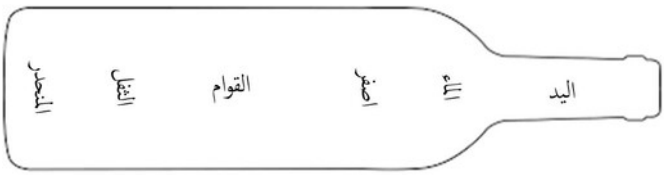
بول حمى اصفر رقيقا سحابته مضطربة في الوانها [أ٧٨] شكل ذلك الاناء



F. 78R (A)

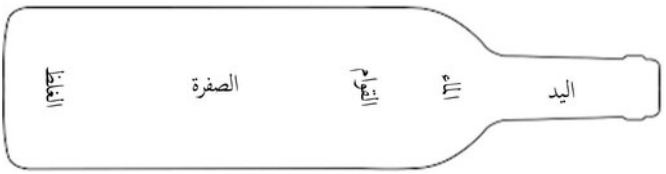
(water of chaff or thin straw). A reader who is well versed in the compensation of incomplete or irregular dotting, may think of the possible variant *mā' al-tīn* (water of fig). From the philological point of view, the former reading may be considered as a *lectio difficilior*. Moreover, considering the material reality behind the text, straw or chaff soaked in water confers a yellow-brownish tone to the liquid. As for the fig, if the expression refers to fig sap, its colour would tend to white and has a thick consistence, in which it would be hard to spot the 'cloud'. It cannot be completely ruled out that the expression refers to a poultice of fig in water.

بول الحمى الصفراوية اذا رايته اصفر وقوامه في وسطه وثفله منحدرا الى اخر الاناء فأنها تدوه فان كان غليظا قليل الصفرة وقوامه فوقه راسب وثفله في الاناء فأنها ستطول شكله



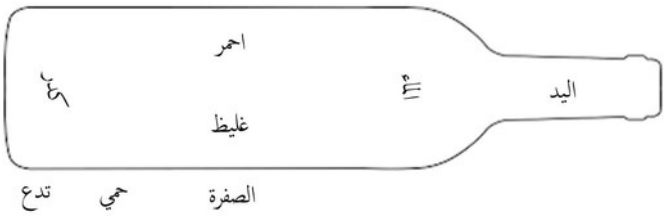
F. 78R (B)

شكل بول حمى تطول على هذه علامات



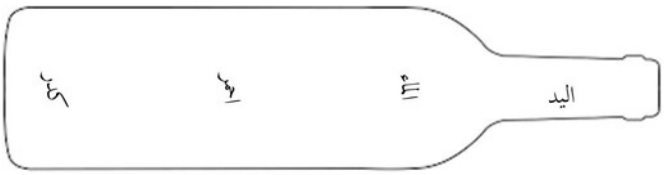
F. 78R (C)

بول صاحب الحمى الدموية اذا رايته احمر غليظا كدرا فانه ستدعه سريعا وان كان احمر كدرا فأنها ستطول [ب٧٨] شكل ذلك الاناء



F. 78V (A)

حمى تطول شكل ذلك الاناء



F. 78V (B)

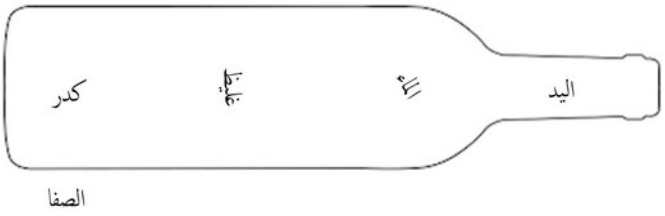
بول صاحب حمى الربع وهي السوداوية اذا رايته الى الرقة والصفار فأنها ستطول به وان كان في ثفل ستدعه سريعا شكل ذلك الاناء

F. 78V (C)

حمى تطول شكل ذلك الاناء

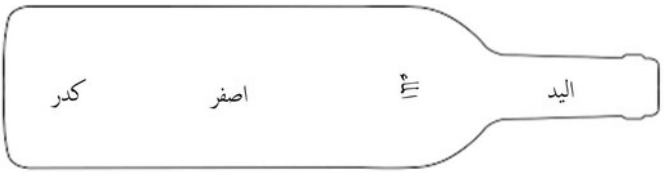
F. 78V (D)

[٧٩أ] بول صاحب الحمى المواظبة وهي البلغمية اذا رايته كدرا فأنها ستطول به وان كان فيه صفرة فأنها ستدعه شكل ذلك الاناء



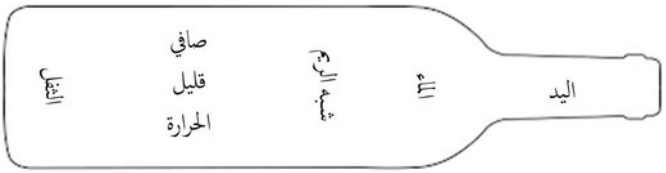
F. 79R (A)

حمى تدعه سريعا شكل ذلك الاناء



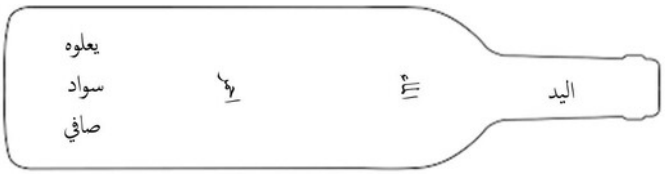
F. 79R (B)

بول صاحب الحمى الرقيق قليل الحمرة وصافي وفوقه شبه الريم شكله للسليمة



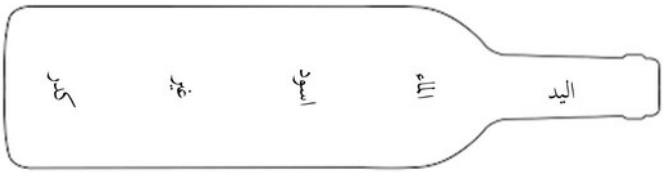
F. 79R (C)

بول صاحب اليرقان احمر يعلوه سواد صافي [ب٧٩] شكل ذلك الاناء



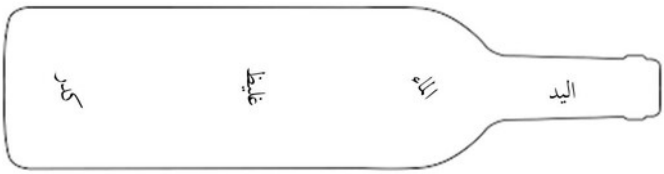
F. 79V (A)

بول صاحب وجع الطحال اسود غير كدر شكل ذلك الاناء



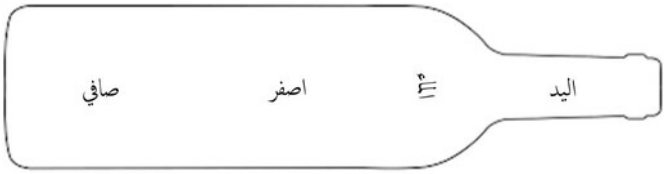
F. 79V (B)

بول صاحب وجع الكبد غليظ كدر شكل ذلك الاناء



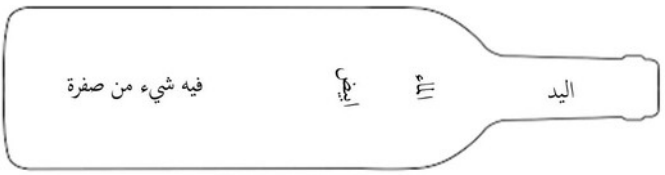
F. 79V (C)

بول صاحب السعال اصفر رقيق صافي شكل ذلك الاناء



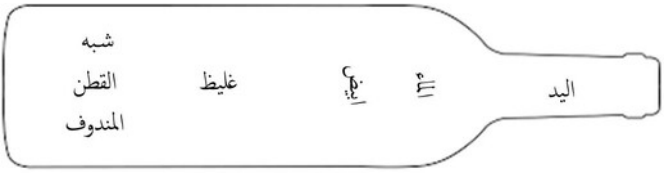
F. 79V (D)

[أ٨٠] بول صاحب الصداع ابيض فيه شيء من صفرة شكله



F. 80R (A)

بول صاحب وجع الظهر والمفاصل ابيض غليظ في اسفله شبه القطن المندوف شكله



F. 80R (B)

فان قال قائل ان يمسك البول في الليل ولن يمسك في النهار ما يبال

قيل له اننا نريد بالنظر الى البول معرفة انهضام العلل وغاية ذلك يكون بالنوم فلم كان ذلك كذلك صرنا نامر ان يمسك البول عقيب النوم الطويل واخر الليل

فان قال قائل ان كان سهر ليله ونام نهاره ثم امسك [ب٨٠] بوله اخر لينظر اليه

قيل له ان الطبيعة اعتادة نوم الليل وهضم العلل يهود عليها فيه. تريد العادة. وقد كادت العادة ان تكون طبيعة نافية. وبول النهار فيه بعض الهضم وليس كبول الليل. والطبيعة تهضم بول الليل هضما حسنا لحال عادتها بنوم الليل. وتهضم بالنهار هضما يسيرا لقلة عادتها به وذلك انها متعودة ان تهضم بالنوم فاذا اهضمت بنوم النهار لكنه هضم بطيء

فان قال قائل لم صرنا ننظر الى البول منذ اول النهار الى ستة ساعات منه ولا ننظر اليه اخر النهار

قيل له قد تسلمنا فيما سلف من قولنا البول كالأصباغ اذا مكثت تغيرت. كذلك أيضا الوان البول اذا مكثت تغيرت الوانها وخاصة جزء الحرارة منه وجميع الوانها تنقطع وتذهب اذا ابتلت كذلك جميع طبائع البول تتغير وتنقطع اذا امكثت. وثفل البول أيضا يذوب اذا امكث ستة ساعات. فكذلك نعنى عن النظر اليه

فان قال قائل لم صرنا له ننظر الى بول الصبيان

اجبناه ان طبائعهم رطبة تشبه اللبن وليس فيهم حرارة صفراوية فتركنا [أ٨١] ذلك لاصل هذا السبب والله اعلم

MS Collegesville, Minnesota HMML OLM 00041, ff. 70r–80v—English Translation

[70r] In the Name of God the Living, the Eternal, my faith is in Him and in Him my confidence.

Summary of what Galen said about urine.

The things that perfect the existence of the man are three and all of them are hot, they are: blood, pneuma, and sperm.

They are abundant in children and, in this way, Hippocrates said that natural heat is really abundant in children.

In young men, they are in a proportionate measure.

In old men, they are in small measure since these are cold and dry.

[70v] **The thin thing in the body is one out of three things:**

as for **pneuma**, this is the apogee of thinness; as for moist vapour, this is in the middle between pneuma and thin blood; as for the thin blood, this is the least thin of them all.

It is said that action derives from the natures, and from the action [derives] movement, from the movement [derives] heat; then the sign of this movement comes, concurs with stillness and so from the stillness derives cold, and so hotness reaches the higher part, whereas coldness reaches the lower part.

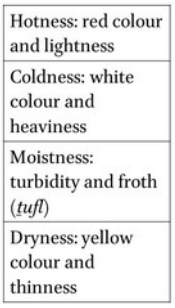
Then the movement turns against coldness and heats it, so coldness burns, and so moistness melts and flows from it.

Then, hotness dries this moistness, the place without moistness becomes dry, so for this reason it becomes hot & moist and cold & dry

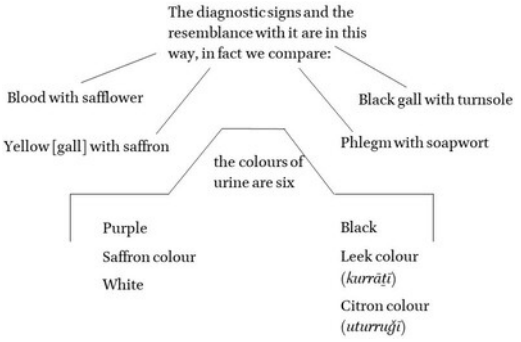
The highest part is hot and moist, whereas the lowest part is cold and dry.

Then, the ascending hotness and the descending coldness mix together, and fire is generated from them.

Then in the height, the moistness mixes with coldness and thus water is generated from them; for this reason fire and air rise, whereas earth and water descend, and each one of these natures has a colour and a rank. [71r]



F. 71R (A)



F. 71R (B)

Hotness: red colour and lightness
Coldness: white colour and heaviness
Moistness: turbidity (*kudra*) and residue (*ṭufl*)
Dryness: yellow colour and thin

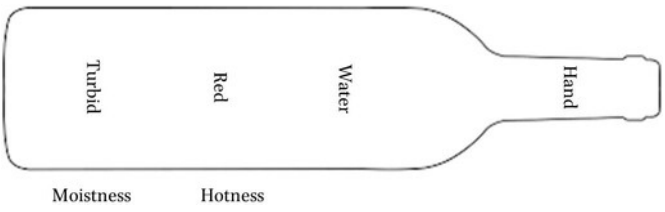
The diagnostic signs and the resemblance with it can be compared like this:

Blood with safflower	Black gall with turnsole
Yellow [gall] with saffron	Phlegm with soapwort (*ṣābūn*)

There are six colours of urine:

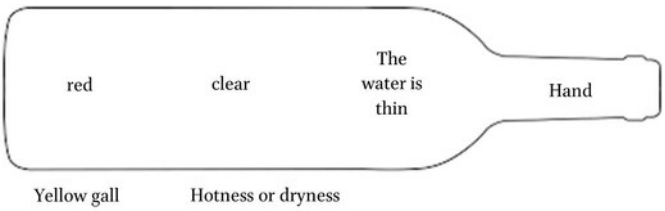
Purple	Black
Saffron colour	Leek colour (*kurrāṭī*)
White	Citron colour (*uturruǧī*)

From this, if you see that the urine is red and turbid, then blood is predominant in the person; as for its redness, it indicates hotness; if it is turbid, it indicates moistness; likewise, blood is hot and moist in this way. This is how this flask appears:



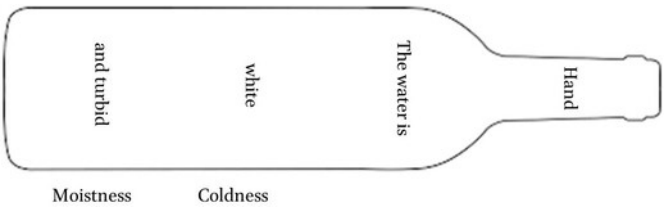
F. 71R (C)

[71v] If you see that the urine is red, clear, and thin, then yellow gall is predominant in the person; as for its redness, this indicates hotness; as for its clarity and thinness, the two indicate dryness, likewise yellow gall is hot and dry in this way. This is how this flask appears:



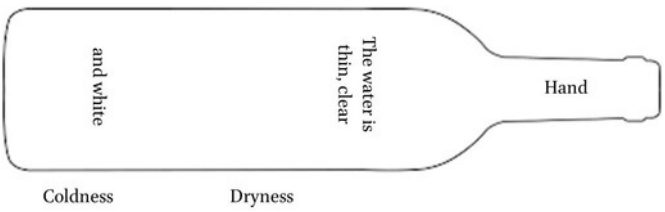
F. 71V (A)

If you see that it is white and turbid, then phlegm is predominant in the person; if it shows whiteness, this indicates coldness; as for its turbidity, it indicates moistness; likewise, phlegm is cold and moist in this way. This is how this flask appears:



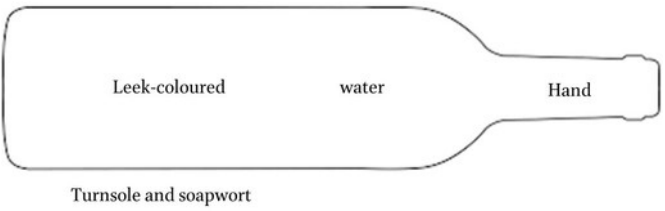
F. 71V (B)

If you see that the urine is white, clear, and thin, then black gall is predominant in the person; as for its whiteness, it indicates coldness; as for its clarity, it indicates dryness; likewise, black gall is cold and dry in this way. This is [72r] how this flask appears:



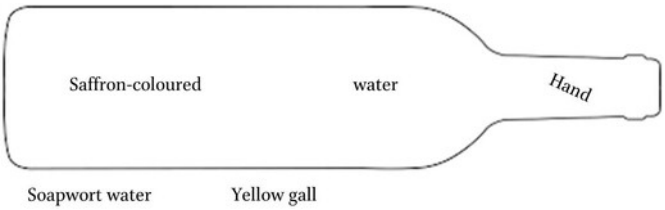
F. 72R (A)

The natures, the illnesses, the diseases, and the diagnostic signs combine in this way, so when the turnsole mixes with soapwort, then its colour will be leek; likewise, when black gall mixes with phlegm, then the colour of the urine will be leek. This is how this flask appears:



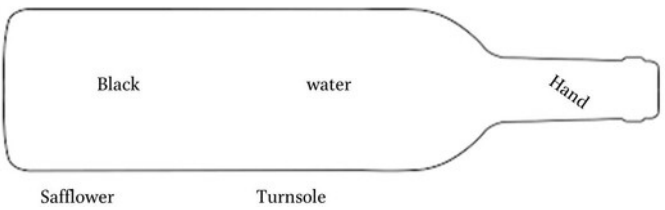
F. 72R (B)

If yellow colour mixes with the water of soapwort, then it will have the colour of saffron; likewise, if yellow bile mixes with phlegm, then the urine will have the colour of saffron. This is how this flask appears:



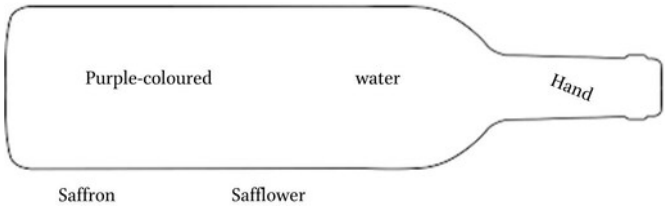
F. 72R (C)

[72v] If the turnsole is mixed with safflower, then it will become black with a red hue; likewise, if black gall mixes with blood, then the colour of the urine will be black. This is how this flask appears:



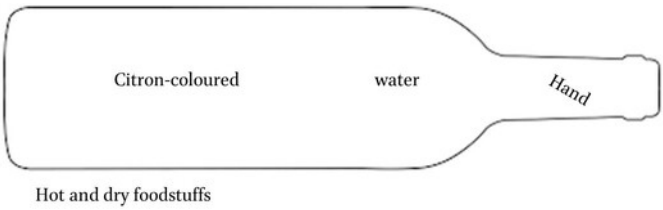
F. 72V (A)

If saffron mixes with safflower, the colour will be purple, and this has the colour of a compound of saffron (*ḫalūqī*). This is how this flask appears:



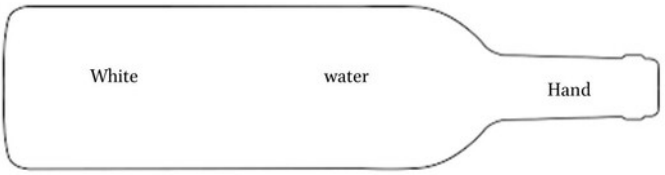
F. 72V (B)

When somebody says: "The colour of the yellow gall is red as a result of hotness, whereas the colour of blood is red, so this redness is in the redness of the flask." We reply: "The redness of safflower has the same status as the redness of saffron, so it becomes yellow when it dissolves; likewise, yellow bile becomes yellow when it surfaces and appears on the outside; as it is said with respect to the colour of leek, it is said to derive from black and yellow gall because, when you mix [73r] yellow gall with black gall, then it becomes of the colour of leek."
We said to him: "Indeed, if a cloth is dipped in turnsole [dye], it will become green, if instead it is held there for longer, it becomes black, the same is true for black gall; if we leave a sign on a cloth with saffron, then it will take the colour of citron; urine does the same; when it gets close to the hotness of gall, then its yellowness sticks to it; both hot and dry foodstuffs decrease phlegm and then it [the urine] will take on the colour of citron and this is natural." This is how this flask appears:



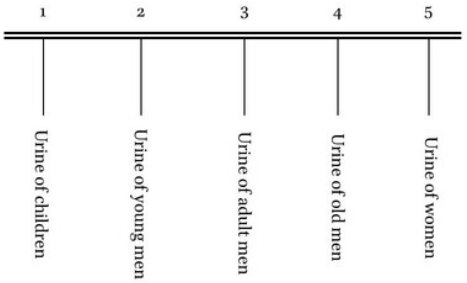
F. 73R (A)

When the mixture blends with some cold and moist foodstuff at any time, then the yellowness will be slight; with a more intense phlegm, the urine will be white, and this is also natural. This is how this flask appears:



F. 73R (B)

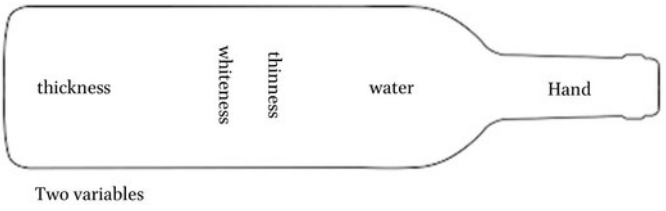
[73v] Urine is divided into five natures:



F. 73V (A)

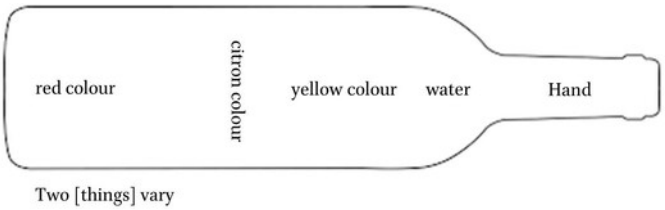
1. Urine of children
2. Urine of young men
3. Urine of grown men
4. Urine of old men
5. Urine of women

The urine of children is white without any variation in how thin or thick it is; it reflects the nourishment of the baby. This is how this flask appears:



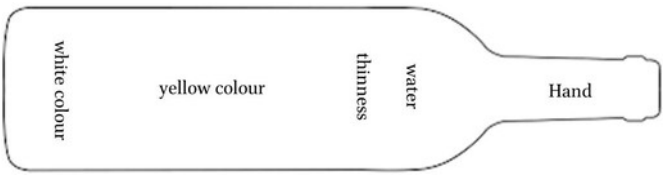
F. 73V (B)

The urine of young men resembles the colour of citron, with variations in the redness and yellowness. This how this flask appears:



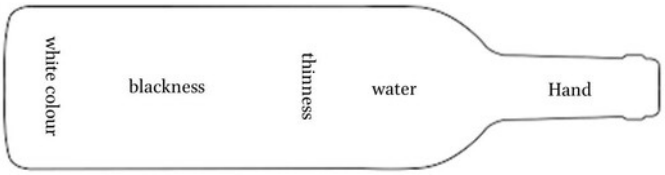
F. 73V (C)

[74r] The urine of grown men is white, there is a thinness to it, without any variation of the yellowness. This is how this flask appears:



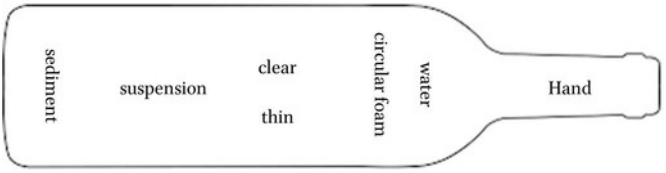
F. 74R (A)

The urine of old men is similar to the urine of children, apart from the fact that it tends towards the blackness of water. This is how this flask appears:



F. 74R (B)

The urine of women is more intensely white than the urine of men; it is thin and tends to be clear; its water and its suspension descend towards the bottom of the flask; its sediment is white; when you agitate it, it does not become turbid; on top of the flask there is a circle of foam (*zabad mustadīr*). This is how this flask appears:

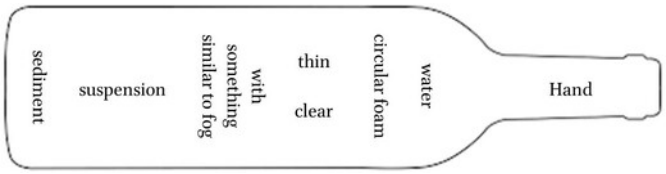


F. 74R (C)

[74v] If along with the foam there is something resembling filaments, then this is water that bears signs of intercourse. This is how this flask appears:

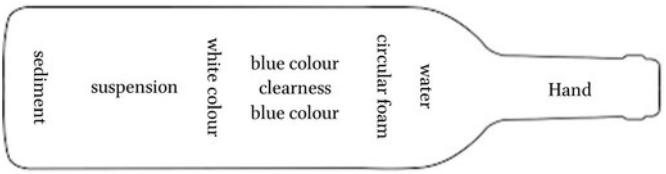
F. 74V (A)

When its colour is similar to white, and the urine is clear, then this is the urine of a pregnant woman. This is how this flask appears:



F. 74V (B)

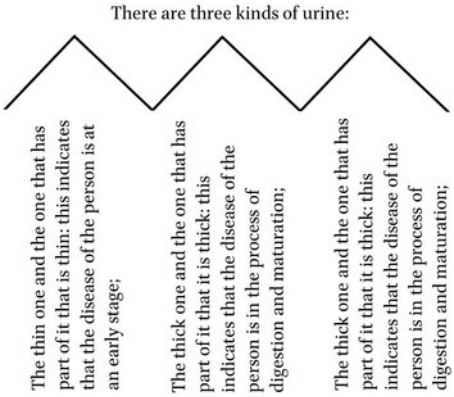
And if there is something blue in it, then this indicates that it is the first pregnancy; if instead there is nothing blue in it, then it is another pregnancy [than the first]. This is how this flask appears:



F. 74V (C)

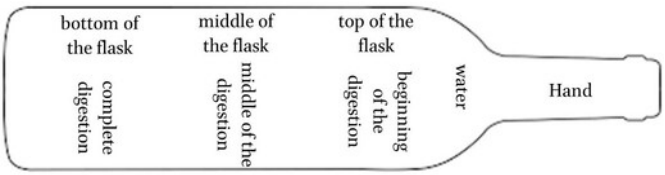
[75r] There are three kinds of urine:
– **The thin one** and the one that has part of it that is thin: this indicates that the disease of the person is at an early stage;
– **The thick one** and the one that has part of it that it is thick: this indicates that the disease of the person is in the process of digestion and maturation;
– **One with a turbid sediment** at the bottom: this indicates that the disease of the person has already been digested and dissolved.

Froth may be found in three places in the flask. This is how this flask appears:



F. 75R (A)

However these three gather in the flask, two are visible from it; either the higher one, which indicates the beginning of the digestion; or the middle one, indicating the middle of the digestion; as for the bottom one, it indicates that the digestion is complete; this sediment has implications that can aid understanding.



F. 75R (B)

[75v] Sometimes it is red, indicating hotness;
sometimes is white, indicating coldness.

Like this the suspension (*qawām*), that is 'the cloud' (*saḥāba*): when you see it still in the higher part of the bottle, then this indicates that the disease has come to a stop; if it is in the middles of the bottle, then it indicates that nature is fighting the disease; if it descends in the flask, then it indicates that the illness has disappeared and its force has been subdued by the physician.
Now the flask must be protected from sudden movement, then one has to look at it so that the cloud becomes visible to him, so that nothing hinders the cloud; it is also necessary for the physician to look first at the water and this [the flask] should be in the left hand so that whoever looks at it can better observe, explain, and get a firmer understanding, because whoever looks at it using his right hand will have his hand covering it and will not be able to observe it; it is particularly impossible for the physician to inspect the urine of a woman or a man in the [right] hand; it is possible, instead, with his left hand. So reason by analogy about this and master it, God—may He be exalted—willing.

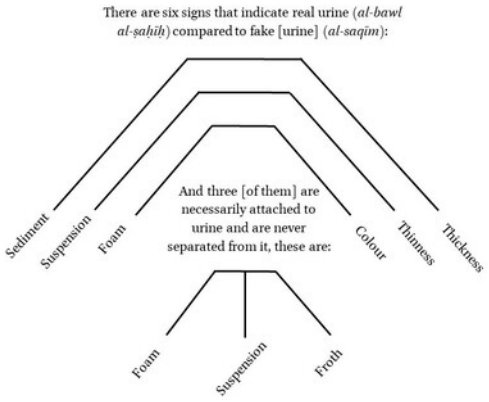
Distinguishing the urine of man from the urine of cattle

You should know that ignorant people seek to confuse with questions those who are knowledgeable in the art of medicine, so among them there is [always] somebody who would like to understand the concepts and the aspects from which you can determine the difference between the two kinds of urine, [76r] that is the urine of cattle and the urine of man, and then he can distinguish for them [human] urine from others; so we are going to make this clear for you and to explain the diagnostic signs about this in a satisfactory abridgement (*talḫīṣ*), God—may He be exalted—willing.
There are six signs that indicate real urine (*al-bawl al-ṣaḥīḥ*) compared to fake [urine] (*al-saqīm*):

the sediment	the colour
the suspension	the thinness
the foam	the thickness

And three [of them] are necessarily attached to urine and are never separated from it, these are:

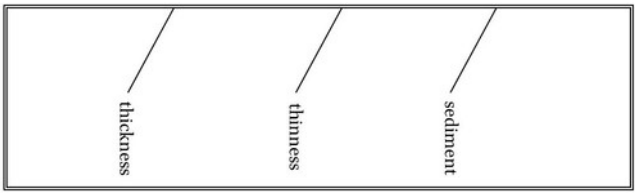
the foam	the suspension	the sediment



F. 76R (A)

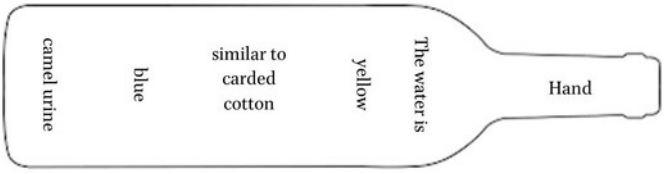
Since sediment, suspension, and foam only ever combine in urine, whereas the three cover it one another and differ in their mixture; and these are the signs from which it is possible to distinguish between the urine of man and that of cattle.

the thickness the thinness the colour



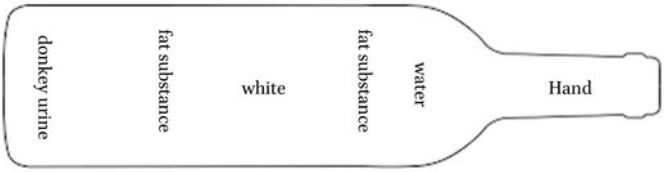
F. 76R (B)

[76v] Camel urine is yellow with something blue in it, in the middle of the flask you will see [something similar to] carded cotton. This is how this flask appears:



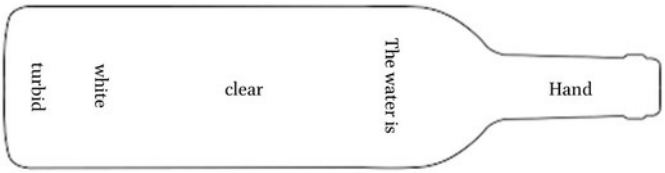
F. 76V (A)

Donkey urine is very turbid and its water tends to be white; you will see that the flask is full of a fat substance and has no suspension or particles (*al-aġbira*) in it. This is how this flask appears:



F. 76V (B)

Horse urine is clearer than the urine of the donkey; it has a more intense white colour but can also appear in the flask as if divided into two halves, a clear half and a turbid half, the upper part is clear and the lower part is turbid. This is how this flask appears:



F. 76V (C)

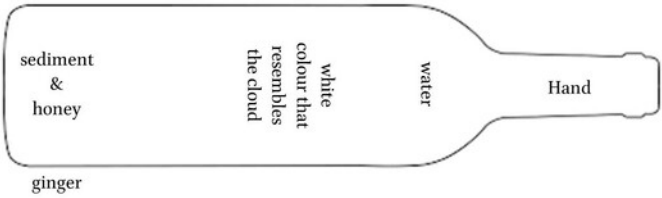
[77r] Mule urine is of a yellow gold; sitting at the bottom of it there is something similar to the water of lime. This is how this flask appears:

F. 77R (A)

Goat urine is white; there is something yellow in it that changes the colour depending on the goat's nourishment; it does not have any suspension; its sediment is at the bottom, in the same way as the sediment of oils appears. This is how this flask appears:

F. 77R (B)

When the water of saffron and ginger are mixed together, it tends to have a yellow and white colour, it does not have any suspension or dust; if these are difficult for you [to recognize], raise the flask above [your head] and observe it, you will then see in the bottom something that resembles congealed honey, and there is something that resembles the cloud and the spume (*al-raġwān*) in it. This is how this flask appears:

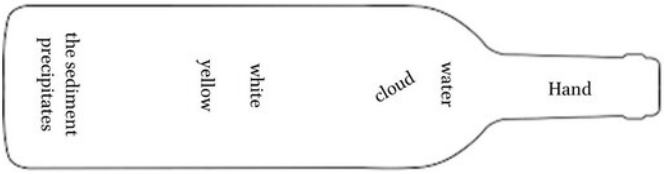


F. 77R (C)

[77V] [The mixture of] water and honey has a foam that has the colour [of honey] whereas the foam of urine is white in all its states, its [artificial] parallel is a red that tends towards yellow. This is how this flask appears:

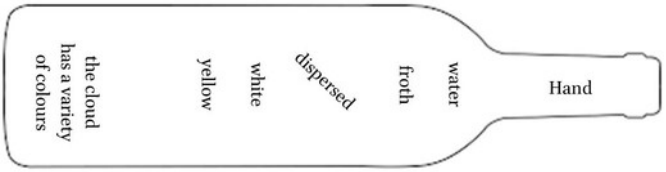
F. 77V (A)

The water of chaff has a cloud and a sediment that is different from its [urine's] sediment when it precipitates to the bottom [of the flask]; it is as if its cloud comes and goes and its sediment is moving in it. This is how this flask appears:



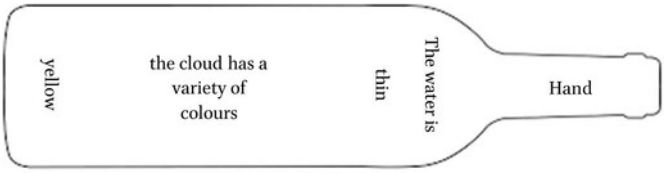
F. 77V (B)

The sign that indicates all types of human urine, this is how this flask appears:



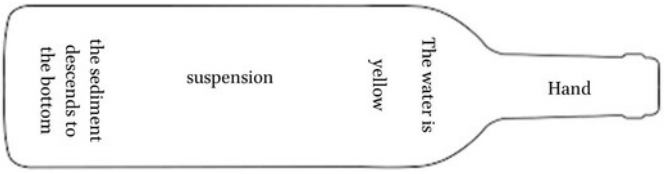
F. 77V (C)

The urine of fever is yellow and thin, its cloud has a variety of colours. [78r] This is how this flask appears:



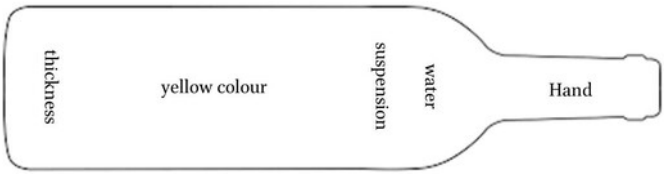
F. 78R (A)

If you see the urine of fever caused by yellow gall, which is yellow, and its suspension is in the middle while its sediment descends to the bottom of the flask, then [the fever] will heal; if, instead, [the urine] is thick with little yellow, and its suspension on top precipitates and there is sediment in the flask, then the fever will last a long time. How this appears:



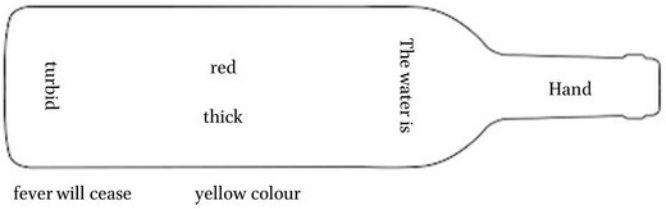
F. 78R (B)

While this is how the urine of a long-lasting [yellow gall] fever appears:



F. 78R (C)

If you see that the urine of a person affected by a blood fever is red, thick, and turbid, then he will heal quickly; if instead it is red and turbid, the fever will last a long time. This is how [78v] this flask appears:

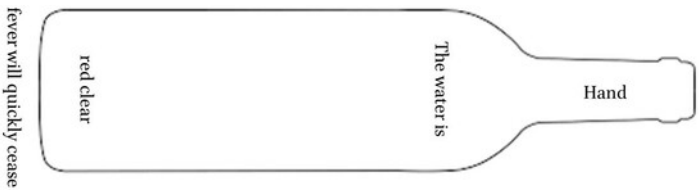


F. 78V (A)

This is how the flask of a long-lasting [blood] fever appears:

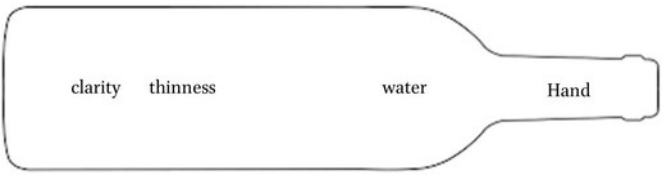
F. 78V (B)

If you see that the urine of a person affected by quartan fever—that is the fever caused by black gall—tends to be thin and have a yellow colour, then the fever will last a long time; if, instead, there is some froth, then it will heal quickly. This is how this flask appears:



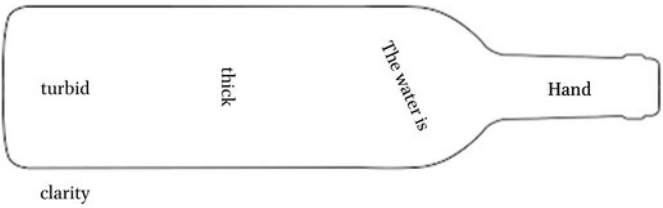
F. 78V (C)

This is how the flask of a long-lasting [quartan] fever appears:



F. 78V (D)

[79r] If you see that the urine of a person affected by persistent fever—that is the fever caused by phlegm—is turbid, then the fever will last a long time; if, instead, there is some yellow colour in it, then it will heal. This is how this flask appears:

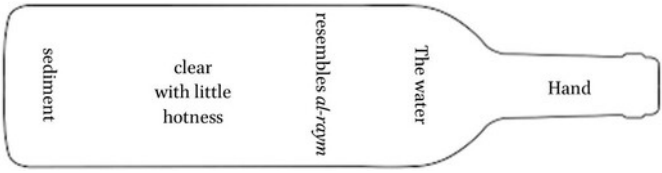


F. 79R (A)

This is how the flask of a [persistent] fever that heals quickly appears:

F. 79R (B)

The urine of a person affected by a hectic fever is thin with a bit of red, and on top of it there is something that resembles foam (*al-rīm*). This is how it appears, for the sake of completeness:



F. 79R (C)

The urine of a person affected by jaundice is red with some pure black on top of it. [79v] This is how this flask appears:

F. 79V (A)

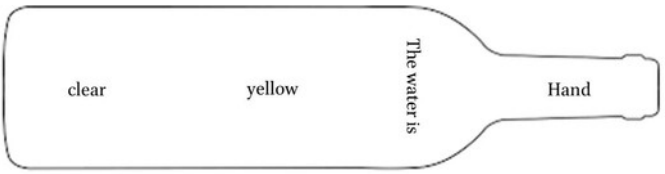
The urine of a person with spleen complaints is black but not turbid. This is how this flask appears:

F. 79V (B)

The urine of a person with liver complaints is thick and turbid. This is how this

F. 79V (C)

The urine of a person affected by a cough is yellow, thin, and clear. This is how this flask appears:

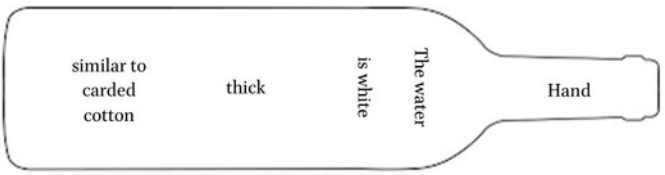


F. 79V (D)

[80r] The urine of a person suffering from epilepsy is white and there is some yellow colour in it. Its appearance:

F. 80R (A)

The urine of a person suffering from pain in the back and in the joints is white and thick, at the bottom there is something similar to carded cotton. Its appearance:



F. 80R (B)

And if somebody says: "Urine is to be collected during the night and what is urinated during the day should not be collected."
It should then be said to him: "Indeed, by observing urine, we want to acquire knowledge about the digestion of diseases and this peak is during sleep; so, because of this fact, we were ordered to collect the urine after a long sleep and at the end of the night."
And if somebody says: "If his night is sleepless and he sleeps during the day, then I will collect [8ov] another [sample of] his urine to observe."
It should then be said to him: "Indeed, nature is accustomed to sleeping at night and the digestion of the diseases proceeds slowly during [night sleep], [you] wish [to obtain] this habit, whereas the habit is almost on the point of being an expelling nature, thus urine from the day contains part of the digestion but it is not like urine from the night; since nature aids digestion very well during the night, as a result of its being accustomed to night sleep, whereas during the day it only digests a little because it is not accustomed to doing this; this is because [nature] is accustomed to digesting during sleep but, when digestion takes place during daytime sleep, the digestion is slow."
And if somebody says: "We are not going to observe the urine from the beginning of the day until six hours later, as we do not observe it at the end of the day."
It should then be said to him: "In the previous part of our discourse, we have established that urine is like dyes: when they are left for a long time, they change; likewise the colours of urine: when the [urine] is left for a long time, its colours change, the peculiarity of the part of hotness and all the [different] colours cease and go away when they are diluted; likewise, all the [different] natures of urine change and cease if it is left for too long; also the froth of urine dissolves when it is left for six hours; so, likewise, we ought to be solicitous about our examination if it."
And if somebody says: "We are not going to observe the urine of children."
We should answer him: "Their natures are moist and resemble milk, there is no hotness produced by yellow gall in them, so we leave [81r] this out for the sake of this cause, and God knows best."

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