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I. Introduction

As a well-known fact, science in the medieval Islamic world has greatly benefitted from Greek (mostly Byzantine) sources that were translated into Arabic in the ninth-tenth centuries CE and thus became part of the Graeco-Arabic transmission of science. This applies particularly to the science of treating horse diseases, as the Arabic term *al-bayṭara*, "veterinary science," or "hippiatry," is ultimately derived from ἱππιατρός, "veterinarian."[1] One of the most important veterinarians specializing in hippiatric medicine was Theomnestus of Nicopolis. It is assumed that his treatise on equine medicine

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[1] Stavros Lazaris, "Veterinary Medicine," in *A Companion to Byzantine Science* (Leiden: Brill, 2020), 411–413.

was composed after 324 CE. To publish the most significant Arabic hippiatric texts and make them accessible to the scholarly community, the Ludwig-Maximilians University of Munich launched the interdisciplinary DFG project "Zur Kontinuität des hippiatrischen Erbes der Antike" more than two decades ago. As a result, two of the most important books on Arabic veterinary science were published in 2008, the Arabic translation of Theomnestus' book on hippiatry, edited and translated by Susanne Saker,[2] and ibn aḫī Ḥizām al-Ǧuttalī's *Kitāb al-furūsiyya wa-l-bayṭara*,[3] edited and translated by Martin Heide. From the beginning of the project onwards, interdisciplinary research has been integral to the translation of both books.[4] Both works provide substantial material for inquiries into aetiology and pathogeny, the therapeutical method, and the drugs administered. This is especially evident in case of diseases that share a common ground with human medicine, such as epilepsy.[5]

It became immediately clear that Theomnestus' Arabic text is directly based on his (now lost) Greek work, allowing detailed comparisons between what is left of the Greek text, as, e.g., transmitted in various medieval veterinary compilations,[6] and the two Arabic manuscripts. Following a comprehensive examination of the Greek sources and the Arabic translation of Theomnestus, C. Dewez and A.-M. Doyen-Higuet underscore the significance of the Arabic translation, asserting that "the Arabic translation of Theomnestus stands as a distinctive instance within the realm of Greek veterinary literature, the study of which is rendered terribly complicated by the loss of the original treatises… both the Greek original and the Arabic translation are indispensable for the study of Theomnestus."[7] It is noteworthy

[2] Susanne Saker, *Die Pferdeheilkunde des Theomnest von Nikopolis* (Wiesbaden: Harrassowitz, 2008).

[3] Martin Heide, *Das Buch der Hippiatrie - Kitāb al-Bayṭara von Muḥammad ibn Yaʿqub ibn aḫī Ḥizām al-Ǧuttalī* (Wiesbaden: Harrassowitz, 2008). The author confined himself to the second part of the original *Kitāb al-furusiyya wa-l-bayṭara*.

[4] Veronika Weidenhöfer, Martin Heide, and Joris Peters, "Zur Frage der Kontinuität des hippiatrischen Erbes der Antike," *Sudhoffs Archiv* 89 (2005): 58–95.

[5] Veronika Goebel, "Die Beschreibung der Epilepsie im Kitāb al-bayṭara," in *Morborum et signa et causas praedicere curasque monstrare. La medicina veterinaria nel mondo antico e medieval*, ed. Lisa Sannicandro and Martina Schwarzenberger (Catania: Litterae Press, 2019), 327–358.

[6] The *Corpus Hippiatricorum Graecorum*, edited by Erich Oder and Carl Hoppe (Leipzig: Teubner, 1924–1927) remains the most significant source text for these compilations.

[7] "La traduction arabe de Théomnestos est un cas unique dans la littérature vétérinaire grecque, dont l'étude est terriblement compliquée par la disparition des traités originaux … tant l'original grec que la traduction arabe sont indispensables pour l'étude de

that numerous Arabic authors specializing in veterinary science have cited it extensively. Prominent among these figures are ibn al-ʿAwwām, who cited it in the section of his book dedicated to agriculture, and ibn aḫī Ḥizām in his already mentioned *Kitāb al-furūsiyya wa-l-bayṭara*. A significant proportion of the treatments delineated in the second part of the book, the *Kitāb al-bayṭara*, are derived from other seminal veterinary sources, including Theomnestus' book. However, the text also draws from a variety of additional sources, some of which are Greek, Persian, or even Indian in origin, and the precise nature of which is not always fully elucidated.[8]

A. The structure of ibn aḫī Ḥizām's Kitāb al- bayṭara and its significance for the diagnosis and therapy of the horse

A comparative analysis of the *Kitāb al-bayṭara* and the Arabic book of Theomnestus reveals the former to be significantly more extensive. The *Kitāb al-bayṭara*, which for editorial reasons has been subdivided into paragraphs, encompasses a total of over 150 descriptions of symptoms, combined with etiological summaries (§§ ending with the index a), and more than 400 treatments (§§ ending with the index b ... z). The initial sections of the book (§§ 1–27) are particularly noteworthy, as they primarily focus on the external limbs. This is significant not only because these sections offer few parallels to the compilations known from the *Corpus Hippiatricorum Graecorum* (CHG) and Theomnestus, but also because the diseases of the extremities are not accorded with the same level of importance in the CHG that one might have anticipated. Nonetheless, the *Kitāb al-bayṭara* incorporated not only the symptoms and therapies that are largely found in the Arabic Theomnestus, but also over 40 additional treatments from various authors that are known to us from the CHG. Of the approximately 560 paragraphs of the *Kitāb al-bayṭara*, which are divided into symptoms with their ailments and therapies, around 190 (and thus more than a third) have been translated from texts known from the CHG, some of which, however, are only remotely comparable.

Two manuscripts of the *Kitāb al-bayṭara* prioritize pragmatism by listing treatments immediately following the aetiology and the description of

Théomnestos." Corentin Dewez and A.-M. Doyen-Higuet, "L'hippiatre Théomnestos: du grec à l'arabe et de l'arabe au grec," in *Morborum et signa et causas praedicere curasque monstrare. La medicina veterinaria nel mondo antico e medievale*, ed. Lisa Sannicandro and Martina. Schwarzenberger (Catania: Litterae Press, 2019), 305.

[8] Heide, *Das Buch der Hippiatrie*, 1, 42-43.

symptoms. This pragmatic approach is also reflected in Theomnestus' Arabic translation. However, it is noteworthy that most manuscripts of the *Kitāb al-bayṭara* methodically maintain these two sections as discrete entities. The exhaustive, meticulous work by Galen may have provided a template for the ordering of etiology and pathogenesis on the one hand, and therapy, on the other, in two parts of the *Kitāb al-bayṭara*.[9] A clear parallel to the book division of the *Kitāb al-bayṭara* is then identified in the *Digesta artis mulomedicinalis* by Publius Flavius Vegetius Renatus (beginning of the fifth century CE). Vegetius's division of the material was intended to provide the reader with a catalogue-like assignment of disease symptoms to clinical pictures and, consequently, to therapy methods. For this reason, the chapter headings of the first book initially present the "Signa morbi" (I, 3–9),[10] and subsequently, in the same sequence, the "Cura morbi" (I, 10–16).[11] The editor of the *Kitāb al-bayṭara* was likely – directly or indirectly – cognizant of Vegetius's contributions: prior to the implementation of therapeutic interventions, it is imperative that the disease has been accurately and precisely identified.[12] Only after this fundamental step is completed may the hippiatrician proceed with the therapeutic approach. The heading of the initial section of the *Kitāb al-bayṭara* (§§ 1a–27a) indicates this: the preferred approach is not a division into the scheme *a capite ad calcem*, rather, it entails a recognition of the diseases that manifest themselves in specific clinical conditions, such as the "diseases caused by accidents."

II. Recent studies of medieval hippiatry as translated into Arabic

More recent studies underscore once more the fact that the importance of veterinary sciences during the Byzantine period cannot be overestimated: "Veterinary literary production never ceased throughout the Byzantine civilization[…] The successive redrafting of some of these texts and their systematic reproduction […] reinforces this idea of a Byzantine civilization in which veterinary medicine was far more developed than previously thought."[13] In the mediterranean east, veterinary books, especially books

[9] Heide, *Das Buch der Hippiatrie*, 1, 13–14.

[10] "Signs of the disease," in Ernst Lommatzsch, *P. Vegeti Renati Digestorum artis mulomedicinae libri,* (Leipzig, 1903), 3.

[11] "Treatment of the disease," Lommatzsch, *P. Vegeti Renati Digestorum artis*, 3.

[12] See the prologue of Vegetius in Lommatzsch, *P. Vegeti Renati Digestorum artis*, 12–15. On the significance of Vegetius' contributions to the field of veterinary medicine, see also Lazaris, "Veterinary Medicine," 406–407.

[13] Lazaris, "Veterinary Medicine," 427.

dealing with hippiatry, were translated into Arabic and subsequently advanced by the ʿAbbāsid rulers[14] from the ninth century onward. Moreover, Arabic translations offer a comprehensive perspective on these literary products, particularly given that the Greek originals are sometimes only extant in late copies, in fragmentary condition, or have been lost.

The continuity of Arabian hippiatry during the Byzantine and later periods, in connection with the dissemination of hippiatric knowledge (also in handbook-format),[15] its subsequent adoption and adaptation by diverse cultural contexts (not only, of course, by Arabic-speaking cultures), and the many interpretations, translations, commentaries, and new works that have emerged from these intellectual processes require a re-evaluation of the Mediterranean Middle Ages. "We can finally cease to belittle the Mediterranean Middle Ages as a poor, even barren, period and area in terms of scientific achievements."[16]

In 2013, H. A. Shehada published his study on veterinary medicine in medieval Islam.[17] Shehada's selection of the Mamluk period (1250–1517 CE) was primarily influenced by the abundance of sources from that period, both published and unpublished. The study's application to the veterinary treatment of horses and the corresponding literature is merely a segment of a larger, more comprehensive investigation and therefore limited in scope. However, Shehada ignored the two important monographs published by Heide and Saker in 2008, so that his conclusions[18] pertaining hippiatry are

[14] Dimitri Gutas, *Greek thought, Arabic culture. The Graeco-Arabic translation movement in Baghdad and early ʿAbbāsid society* (London/New York: Routledge, 1998).

[15] A.-M. Doyen-Higuet, "L'Épitomé de la Collection d'hippiatrie grecque: Un authentique manuel vétérinaire," in *Epitome. Abréger les textes antiques. Actes du colloque international de Lyon, 3-5 mai 2017*, ed. I. Boehm and D. Vallat (Lyon: Maison de l'Orient et de la Méditerranée, 2020), 45–75.

[16] Stavros Lazaris, "Some Thoughts on the Development of Medieval Hippiatric Science in the Mediterranean Region," in *Anekdota Byzantina. Studien zur byzantinischen Geschichte und Kultur. Festschrift für Albrecht Berger* (Berlin: De Gruyter, 2023), 412.

[17] Housni A. Shehada, *Mamluks and Animals. Veterinary Medicine in Medieval Islam* (Leiden: Brill, 2013).

[18] H. A. Shehada knew only of the two publications published in 2004 and 2005, namely M. Heide, "Beschreibung und Behandlung einiger Erkrankungen, die die Extremitäten der Pferde betreffen," *Welt des Orients* 34 (2004): 105–152, and Veronika Weidenhöfer, Martin Heide, and Joris Peters, "Zur Frage der Kontinuität des hippiatrischen Erbes der Antike: Die Behandlung von Erkrankungen des Bewegungsapparates im Kitāb al-Furūsīya wa-l-Bayṭara," *Sudhoffs Archiv* 89 (2005): 58–95. Both publications merely treat the first section of the *Kitāb al-bayṭara* (§§ 1–27) and came to the conclusion that no significant dependance on Classical texts could be determined (Weidenhöfer, Heide, and Peters, "Zur Frage der

partly erroneous. Notwithstanding, Shehada's study does not only deal with veterinary medicine per se, but also explores the cultural, economic, and social dimensions of the profession. Furthermore, Shehada's analysis encompasses the examination of the place and status of animals and their caretakers within the context of Mamluk society.

In 2017, ʿA. Lamdabar published a new edition of ibn aḫī Ḥizām al-Ḫuttalī's oeuvre, namely the two-partite book *Kitāb al-furusiyya wa-l-bayṭara*, otherwise also known as *al-ḫayl wa-l-bayṭara* "The Horse and Hippiatry." Only one year later, A. El Kasri and J. Hossaini-Hilali published a translation of the aforesaid book. These two publications represent a significant milestone, as they make *both* segments of ibn aḫī Ḥizām's book, horsemanship (*furusiyya*) and hippiatry (*bayṭara*) accessible in Arabic and in French for the first time. The publications of ʿA. Lamdabar[19] as well as of A. El Kasri and J. Hossaini-Hilali[20] raised new hopes that the research on ibn aḫī Ḥizām's work would be sustained and that a more comprehensive understanding of its sources and subsequent transmission would be attained through the discovery (and publication) of new manuscripts. However, both the edition as well as the translation give a rather modest picture. For his edition, ʿA. Lamdabar collated three manuscripts. The oldest manuscript used is Chester Beatty Arab. 3073, which was already collated in Heide's critical edition.[21] Another one from the Royal Library of Rabat (Marocco), no. 6101, was copied in 1836. The third one, no. 71, dating to 1597, from the al-Assad Library of Damascus, Syria, is described as a "corrected" photocopy.[22] A description of the physical condition of all three manuscripts under consideration is provided, but further details as to the guidelines of the critical edition are missing. Furthermore, criteria for the preference of one particular manuscript over

Kontinuität des hippiatrischen Erbes der Antike," 95). Being unaware of, e.g., the numerous parallels between the *Kitāb al-bayṭara* and Theomnestus, Shehada erroneously contends that this conclusion "is of great significance, challenging some accepted beliefs both on the sources of Arabic veterinary medicine, and also on Arabic knowledge as a source of Western science" (Shehada, *Mamluks and Animals*, 16–17). See also the review by T. May in: *Sudhoff's Archiv* 101 (2017): 217–220.

[19] ʿAbd al Lamdabar, *Al-ḫayl w-al-bayṭara l-ibn … Yaʿqūb ibn Isḥāq ibn aḫī Ḥizām al-Ḫuttalī* (Rabat: Association du Salon du Cheval, 2017).

[20] Abdelkrim El Kasri and Jamal Hossaini-Hilali, *Abu ʿAbdallah ibn akhî Ḥizâm al-Khuttalî. Chevaux et Hippiatrie* (Rabat: Association du Salon du Cheval d'El Jadida, 2018).

[21] Heide, *Das Buch der Hippiatrie*, 1, 60–61.

[22] "Il s'agit en fait d'une photocopie complète et corrigée." El Kasri, Hossaini-Hilali, *Abu ʿAbdallah ibn akhî Ḥizâm al-Khuttalî. Chevaux et Hippiatrie*, 10.

another, as well as guidelines for the critical evaluation of readings, and other pertinent matters were not stipulated.

From the description of the textual witnesses, it seems that the text was mainly based on the youngest manuscript, no. 6101 from the Royal Library, of which the original was accessible to the author in Rabat. The edition is fully vocalized, but devoid of a critical apparatus, offering only intermittent notes. Preliminary analysis indicates that the edited Arabic text is mostly consistent with the text published in Heide's edition. This finding suggests that the manuscripts ʿA. Lamdabar used are witnesses of the same text, thereby underscoring once again the importance and widespread use of ibn aḫī Ḥizām al-Ḫuttalī's *Kitāb al-furūsiyya wa-l-bayṭara*.

The translation provided by A. El Kasri and J. Hossaini-Hilali was lauded for its significance in providing French-speaking historians and veterinarians with a first-ever translation of this book,[23] and in general, the *Kitāb al-furūsiyya wa-l-bayṭara* has been translated competently. However, crucial details were sometimes disregarded. This circumstance can be attributed, at least in part, to the failure of ʿA. Lamdabar to undertake a comprehensive evaluation of the Arabic text, and in part to the translator's prioritization of clarity over precision. For instance, in A. El Kasri and J. Hossaini-Hilali's translation, the ailment and pathogeny of the first disease described in the *Kitāb al-bayṭara*, called *mašaš*,[24] reads as follows:

> it could be caused by a piece of stone striking the forehand, or from injuries from shackles or a blow or similar, causing the affected bone to soften and swell until a tumescence appears, more or less the size of a walnut. As a result, the bone loses its original solidity. This tumescence has the colour of goat cartilage, and appears similar to *Jarad*. As a result, the bone loses its original solidity, and the affected part becomes similar to goat skin, which becomes bare and hairless.[25]

[23] Francis Desbrosse, "Chevaux et Hippiatrie, de Abû Abdallah Ibn akhî Hizâm al-Khuttalî. Traduit par Abdelkrim El Kasri et Jamal Hossaini-Hilali," *Bulletin de l'Académie Vétérinaire de France* 172 (2019), 185.

[24] § 1a in Heide, *Das Buch der Hippiatrie*, 1, 85–65; 2, 1–2; p. 237 in Lamdabar, *Al-ḫayl w-al-bayṭara l-ibn … aḫī Ḥizām al-Ḫuttalī* (Rabat: Association du Salon du Cheval), 2017.

[25] "Vessigon (*machach*): pourrait provenir d'un bout de pierre qui l'atteint à la main, des blessures des entraves ou un coup reçu ou autre cas similaire ; ce qui fait que l'os atteint s'amollit et enfle jusqu'à apparition d'une tumescence plus ou moins de la taille d'une noix. L'os s'en ressent au point de perdre sa solidité première. Cette tumescence a la couleur du cartilage des caprins et apparait semblable au jarad (jardon ou éparvin). L'os par

The passage translated by El Kasri and Hossaini-Hilali as "this tumescence has the colour of goat cartilage" is based on a faulty reading in the manuscript or by the editor. Heide's edition reads *muṯaqqab* "pierced, perforated, porose" instead of the questionable *minhā* (?),[26] which is probably a misreading of the former. The correct translation then is, "The *mašaš*[27] is porose, analogous to the epiphyseal tissue from sheep[28] bones." Moreover, the next sentence[29] does not correspond to the Arabic text, which rather reads, "Occasionally, its outgrowth exhibits characteristics analogous to that of the *ǧarad*." The primary meaning of the root *ǧarad* is "bare; worn," or "to be denuded," which most likely inspired A. El Kasri and J. Hossaini-Hilali to expand their translation with the words, "the affected part becomes similar to goat skin, which becomes bare and hairless." However, in Arabic manuscripts, there is sometimes a tendency for the letters *d* and *ḏ* to be confused.[30] This also happened here. Although all manuscripts of the *Kitāb al-bayṭara* consistently write the disease in question as *ǧarad*, the term can be traced back to the Arabic noun *ǧaraḏ*, a swelling in the hinder parts of the horse, "which grows so large as to prevent his walking and working."[31] This is corroborated by the detailed description of the term *ǧarad* in the *Kitāb al-bayṭara*, which characterizes it as "of the form of the *mašaš*, but it does not belong, like the *mašaš*, to the injuries caused by external influence."[32] The *ǧarad* will likely result in lameness. Thus, a cross-reference exists between the description of the *mašaš* and the *ǧarad* in the *Kitāb al-bayṭara*, and vice versa. This observation further underscores the

conséquent perd sa solidité première et la partie affectée devient semblable à la peau des caprins qui se dénude et s'épile." El Kasri, Hossaini-Hilali, *abu ʿAbdallah ibn akhî Ḥizâm al-Khuttalî. Chevaux et Hippiatrie*, 170.

[26] Lamdabar, *Al-ḫayl w-al-bayṭara l-ibn … aḫī Ḥizām al-Ḫuttalī*, 237: ويكون المشش منها مثل المشاش من عظم الشاة (wa-yakūnu l-mašašu minhā miṯla l-mušāši min ʿaẓmi š-šā) the form in question is underlined).

[27] "*Mašaš*" should not be translated as "tumescence" but refers to the very name of the disease which is the subject of the whole paragraph.

[28] الشاة (aš-šā) could also mean "goat," but the former is more often referred to; see Edward W. Lane, *Arabic-English Lexicon* (Edinburgh: Williams and Norgate, 1867), 1023.

[29] "The affected part becomes similar to goat skin, which becomes bare and hairless" ("L'os par conséquent perd sa solidité première et la partie affectée devient semblable à la peau des caprins qui se dénude et s'épile").

[30] Janet Watson, *The Phonology and Morphology of Arabic* (Oxford: Oxford University Press, 2002), 14–15; Joshua Blau, *A Grammar of Christian Arabic*, Fasc. I, CSCO 267 (Louvain: Universitatis Catholicae, 1966), 107–108.

[31] Lane, *Arabic-English Lexicon*, 408.

[32] Lamdabar, *Al-ḫayl w-al-bayṭara l-ibn … aḫī Ḥizām al-Ḫuttalī*, 173; Heide, *Das Buch der Hippiatrie*, 1, 91–92, § 9a,

similarity between the two swellings described as *mašaš* and *ǧarad* respectively, excluding any form of hair loss or the transformation of the affected skin into a state resembling goatskin.

Although the ailments and pathogenies are not numbered, the translators took care to divide the treatments into "articles." For instance, article 1,[33] which aligns with § 1b in Heide's edition,[34] provides the first treatment for the malady termed *mašaš*. It commences with, "we take two parts of narcissus onions and a little of the top of a plant." The ambiguity surrounding the specific identity of the plant is resolved by consulting Lamdabar's edition.[35] The reading "top of a plant," which corresponds in the underlying Arabic text merely to *sanama* "peak, top," is a misreading[36] for *sanām* "camel's hump." *Sanām* obviously refers to the fat that constitutes about 80% of the hump. The "top of the plant" reemerges in the subsequent paragraph of Lamdabar's edition, resulting in a misinterpretation of the entire treatment. The idea behind treating the *mašaš* with camel-hump's fat is to obtain a protective coating, thereby facilitating its dissolution and the subsequent healing process.

Subsequently, ibn aḫī Ḥizām offers another treatment of the same disease, which A. El Kasri and J. Hossaini-Hilali translate as, "take blond mustard, dehair it and mix it with essence of beetroot juice, then coat the affected area without letting it spill over."[37] However, in these medieval treatments, Arabic *ḫardal* always means mustard seed, and to "dehair" mustard seed is a mistranslation of the Arabic verb *yudaqqu* "pulverize, grind," which is correctly given in ʿA. Lamdabar's edition.[38] Another treatment of the *mašaš* recommends taking a water jug[39] ("cruche") and to add balsam oil, onions, cantharides, olive oil, etc. The jug should be left in a dry, sunny place "for five months in summer, and another five months in winter."[40] However, the

[33] A. El-Kasri, Hossaini-Hilali, *Abu ʿAbdallah ibn akhî Ḥizâm al-Khuttalî. Chevaux et Hippiatrie*, 199.

[34] Heide, *Das Buch der Hippiatrie*, Teil 1, 132; Teil II, 62.

[35] Lamdabar, *Al-ḫayl w-al-bayṭara l-ibn … aḫī Ḥizām al-Ḫuttalī*, 267.

[36] This misreading is either attributable to the manuscript's copyist or to its editor.

[37] "On prend de la moutarde blonde qu'on épile et on malaxe avec l'essence de blette et on enduit l'endroit touché sans que ça déborde" (p. 199). § 1d in Heide, *Das Buch der Hippiatrie*, 1, 133.

[38] "On prend une cruche d'eau pouvant contenir l'équivalent de 8 livres," El-Kasri, Hossaini-Hilali, *Abu ʿAbdallah ibn akhî Ḥizâm al-Khuttalî. Chevaux et Hippiatrie*, 267.

[39] El-Kasri, Hossaini-Hilali, *Abu ʿAbdallah ibn akhî Ḥizâm al-Khuttalî. Chevaux et Hippiatrie*, 200. Heide, *Das Buch der Hippiatrie*, 1, 134, § 1f.

[40] "On laisse la cruche reposer dans un endroit sec et ensoleillé pendant 5 mois en été, et en hiver, 5 autres mois."

Arabic term *qirba* denotes a waterskin, not a jug. The fundamental principle underlying this procedure is to subject the ingredients to the thermal energy of sunlight, thereby facilitating controlled content fermentation and/or dissolution in an enclosed environment, which is best achieved with the help of a waterskin, made of goat- or sheepskin. Moreover, the Arabic text does not mention summer and winter but directs putting the waterskin five months into a place that is exposed to the heat of the sun, and five additional months in a cool place.

The text and translation of the opening chapters of the *Kitāb al-bayṭara*, with their distinctive treatment of the *mašaš*, illustrate that the meticulous philological work in a critical edition, aimed at ensuring the Arabic text's integrity, and a translation that respects the intended meaning of the author, are paramount. As already pointed out, the edition of ʿA. Lamdabar adds to our knowledge of the wide dissemination of ibn aḫī Ḥizām's book, but the edition itself, which seems to rely more or less on the manuscript available to the author (?), has not been critically compared with other manuscripts. Notwithstanding, the translation of the *Kitāb al-bayṭara* provided by A. El Kasri and J. Hossaini-Hilali offers assistance in the correction of some minor errors in Heide's translation. Describing glanders in § 30a, the indicators are not "purulent swellings,"[41] or "tough swellings,"[42] but "stone-hard swellings."[43] In the treatment § 147b, the text does not mean, "this is a very dangerous method which instils fear in it,"[44] but "this is a very dangerous method which I personally fear."[45] The heading of § 160c does not mean, "formula for ocular treatment,"[46] but "formula for the treatment of a callosity on the eyelid."[47] However, it appears that A. El Kasri and J. Hossaini-Hilali

[41] "In den Gelenken entstehen eitrige Schwellungen." Heide, *Das Buch der Hippiatrie*, 1, 101.
[42] "Aux articulations, apparaissent des tuméfactions dures," El-Kasri. Hossaini-Hilali, *Abu ʿAbdallah ibn akhî Ḥizâm al-Khuttalî. Chevaux et Hippiatrie*, 178.
[43] *Aurāmun mutaḥağğiratun*. Heide, *Das Buch der Hippiatrie*, 2, 30; Lamdabar, *Al-ḫayl w-al-bayṭara l-ibn … aḫī Ḥizām al-Ḫuttalī*, 248.
[44] "Diese Behandlung ist sehr gefährlich, sie flößt ihm Furcht ein," Heide, *Das Buch der Hippiatrie*, 1, 261.
[45] "Mais c'est là à mon avis une méthode bien dangereuse que je redoute personnellement." El-Kasri, Hossaini-Hilali, *Abu ʿAbdallah ibn akhî Ḥizâm al-Khuttalî. Chevaux et Hippiatrie*, article 159, 280.
[46] "Rezept einer Behandlung zur Augenheilung." Heide, *Das Buch der Hippiatrie*, 1, 268.
[47] Max Meyerhof, *The Book of the Ten Treatises on the Eye Ascribed to Hunain Ibn Is-Hâq* (Cairo: Government Press, 1928), 176; Franco Montanari, *The Brill Dictionary of Ancient Greek* (Leiden: Brill, 2015), 1238. El Kasri and Hossaini-Hilali's "durcissement" (*Abu ʿAbdallah ibn akhî Ḥizâm al-Khuttalî. Chevaux et Hippiatrie*, 285) comes close but does not align with the medical term employed in this context.

failed to consult both S. Saker's and M. Heide's monographs. Consequently, specific textual passages, particularly those that underwent the Greek-Arabic translation process, retained a low degree of clarity. For instance, one of the treatments of glanders commences with, "for the same disease in the joints, the animal must be scarified, but in spring, until the blood stops flowing."[48] The editor marked the specification "in spring" (*fī r-rabīʿ*) as an insertion from his second manuscript.[49] However, this is a misreading – either by the scribe or by the editor – for *fī r-rusġ* "in the fetlock."[50] For the same reason, the authors sometimes failed to recognize specific names of ingredients. For instance, the treatment against flatulence prescribes the administration of "old grape syrup" (*ṭilāʾ ʿatīq*), not "old wine syrup."[51] While here the discrepancy between the French translation and the intended meaning remains negligible, in another instance, the translation becomes incomprehensible, because the same ingredient (*ṭilāʾ ʿatīq*) is mistranslated as "aged plaster."[52]

All advances and setbacks in the decoding of ibn aḫī Ḥizām al-Ḫuttalī's book on hippiatry testify to the fact that it remains a splendid illustration of the reception and adaptation of Greek and Near Eastern scientific knowledge in the Early Middle Ages, prompting us to continue our research on the subject with diligence.

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[48] "Pour le même mal aux articulations, on doit scarifier l'animal, mais au printemps, jusqu'à interruption du sang." El-Kasri, Hossaini-Hilali, *Abu ʿAbdallah ibn akhî Ḥizâm al-Khuttalî. Chevaux et Hippiatrie*, 224.

[49] Lamdabar, *Al-ḫayl w-al-bayṭara li-bn … aḫī Ḥizām al-Ḫuttalī*, 299.

[50] Heide, *Das Buch der Hippiatrie*, § 30b, 1, 167; 2, 30; Saker, *Die Pferdeheilkunde des Theomnest von Nikopolis*, 40–41.

[51] "Gros vin ancien," ʿLamdabar, *Al-ḫayl w-al-bayṭara li-bn … aḫī Ḥizām al-Ḫuttalī*, 303; El-Kasri, Hossaini-Hilali, *Abu ʿAbdallah ibn akhî Ḥizâm al-Khuttalî. Chevaux et Hippiatrie*, 226. Cf. Heide, *Das Buch der Hippiatrie*, § 34b, 1, 173; 2, 165; Manfred Ullmann, *Wörterbuch zu den griechisch-arabischen Übersetzungen des 9. Jahrhunderts* (Wiesbaden: Harrassowitz, 2009), 182.

[52] "… qu'on laisse macérer dans un enduit vieilli pendant toute une nuit," ʿLamdabar, *Al-ḫayl w-al-bayṭara li-bn … aḫī Ḥizām al-Ḫuttalī*, 305; El-Kasri, Hossaini-Hilali, *Abu ʿAbdallah ibn akhî Ḥizâm al-Khuttalî. Chevaux et Hippiatrie*, 228, article 38. Cf. Heide, *Das Buch der Hippiatrie*, § 38c, 1, 176; 2, 170.

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