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Stolen Horses and Scented Garments: Vegetal and Mineral Yellow in Arabic Technical Literature

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Mediaeval Arabic technical literature shows a keen interest in yellow dyes, paints, varnishes, inks, and even perfumes. Recipes reveal that yellow was viewed as just one step away from gold, with preparations for these two colours often sharing ingredients and techniques. In the unfolding of procedures and applications to different materials, from skin to textiles, Arabic sources also offer a glimpse into daily life and shared tastes, presenting luxury objects along with their imitations. This paper traces the role played by yellow and gold in inks, cosmetic dyes, and coloured, scented fabrics, exploring the textual dimension of these recipes, their technical features, and their social role between the court and the street. It also presents translations of several important recipes for yellow and gold dyes, which illustrate their diversity of applications, while also addressing such material problems as durability and substitution.

Introduction

This study explores the linguistic, literary, and material elements that intertwine around the colour yellow in premodern Arabo-Islamic culture, from the perspective of technical handbooks composed between the eleventh and the fifteenth centuries. It follows the traces of yellow through a number of technical works dealing with different crafts, such as the preparation of pigments and dyes, and explores their role in practices of entertainment and deception. Recipes and procedures move between collections as erratic blocks and, often, their lines of transmission cross

over to neighbouring fields, such as medicine and pharmacology.¹ At the same time, these materials are precious sources for cultural and material history, as they reveal much about shared tastes and common aspirations, as well as the situations and common objects that accompanied daily life as portrayed in Arabic mediaeval sources.

In his compendium of Arabic lexicographical sources, Edward W. Lane summarised the varied semantic spectrum of “yellow” in Arabic. The adjective (*aşfar*, from the root *şfr*) derives from a well-known colour (*şufra*) that, when referring to camel hair, suggests a kind of yellow interspersed with black, or the other way around. This colour is also associated with metals, and may indicate either the metal from which vessels and women’s jewels are made (*şufr*, as a synonym of *nulḥās*, which refers to both copper and brass) or gold. The feminine nominal form (*al-şafra*’), too, may mean “gold,” sometimes in combination with silver, called “the white one” (*al-bayḍā*’).² Al-Zarḥūrī’s *Flowers of the Garden* (fifteenth century), however, includes a chapter on fireworks in which “yellow” is presented as the code name experts used for sulphur, one of the three basic ingredients of such preparations, along with saltpetre (“white”) and coal (“black”).³ In medical contexts, the word *al-şafra*’ is used to indicate yellow gall.⁴ The name for a certain pallor of the skin that may derive from an unhealthy condition, giving the skin a yellow hue (*şafar*), derives from the same root (*şafār*). An intense, reddish yellow colour is named after the Arabic expression for egg yolks (*şafār al-bayḍ*). And the expression “the two yellow ones” (*al-aşfarāni*) is used in a proverb to denounce the two things that bring women to ruin, namely saffron and gold, with reference to greediness and vanity.⁵

Procedures for preparing yellow dyes and pigments are well represented in Arabic technical literature. This confirms the impression conveyed by lexicography, namely that yellow is equally associated with vegetal substances (turmeric, curcuma, saffron, safflower) and mineral ones (orpiment, copper or brass, gold).

¹ The complete translations and, in one case, the *editio princeps* of the Arabic sources are collected in the Appendices. As far as possible, specific recipes dealing with yellow and gold have been presented in their larger textual context.

² Arent Jan Wensinck, *Concordance et Indices de la Tradition Musulmane*, 8 vols. (Leiden: Brill, 1992), vol. 2, 369. Unless otherwise indicated, all translations from Arabic are by the author.

³ Muḥammad ibn Abī Bakr al-Zarḥūrī, *Zahr al-basāṭin fī ‘ilm al-mašāṭin. Kitāb turāḥī nadir fī al-tiqāna wa-l-şinā’āt, taḥqīq wa-dirāsa* Luṭf Allāh al-Qārī (al-Qāhira: Dār al-kutub al-mişriyya, 2012), 169.

⁴ The connection between humours and dyes emerges also from a pseudo-Galenic treatise on urine, in which each of the four humours is associated with a yellow-red vegetal dye (safflower, saffron, turnsole, and soapwort). This parallel was probably arranged as aide-memoire for students of medicine, guiding them to formulate diagnoses based on the observation of urine. See Lucia Raggetti, “The Humours and the Dyes: A New Witness to the Arabic Tradition of Galenic Summaries on Urine,” *Nuncijs* 38 (2023): 397–443.

⁵ The classical collection of proverbs by al-Maydānī includes a saying about the two ‘scents’ that desert those who have grown old: that is, the sensual pleasures of food and sex (ذَهَبَ مِنْهُ الْأَطْيَابُ). See Abū Faḍl al-Maydānī, *Mağmu‘a al-amṭāl*, taḥqīq Muḥammad Muḥyī al-Dīn ‘Abd al-Ḥamīd (Bayrūt: Dār al-Ma’rifa li-āl-ṭibā‘a wa-al-naşr, 1955), I 281 No. 1482. The same structure is shared by other sayings that place semantic and rhythmic stress on the dual in final position. Ibn Qutayba (d.889) enumerates quite a few of them in the chapter that gives concrete examples of the use of dual forms: “It is said, ‘the two scents left him,’ meaning food and sex; ‘the two red things ruin men,’ that is wine and meat; ‘the two yellow things ruin women,’ that is saffron and gold; ‘the two white things gather around women,’ that is fat and young men; ‘the two times came upon him,’ that is lunch and dinner; ‘the two moments,’ that is night and day, also called the two new ones; ‘the two ‘Umar,’ that is Abū Bakr and ‘Umar, may God be pleased by them; ‘the two black things’ are dates and water.” Ibn Qutayba, *Adab al-kātib*, taḥqīq Muḥammad al-Dālī (Bayrūt: Mu‘assasat al-risāla), 41–42.

Especially when yellow overlaps with gold, the question is whether the precious metal is actually used, or simply imitated using a wide range of techniques and ingredients. The technical handbooks were produced in different contexts, sometimes connected to the court, and sometimes to the street. In other words, technical literature was generated by erudite scholars in an aristocratic environment, as well as by skilled craftsmen and practitioners. These two social groups represent the extreme points of the continuum of technical knowledge: they shared the same goals, yet differed over the use of more or less expensive materials, with the more popular craftsman trying to imitate, through inexpensive methods, productions meant for the high end of the market.⁶

A number of crafts engaged with the making of yellow in order to produce pigments and inks to dye metals and fabric, and also skin and hair. Yellow was thus embodied in concrete material objects and sometimes even in the bodies themselves (hair and skin). Its role and status were certainly influenced by common knowledge, shared taste, and literary tradition. In particular, in premodern Islamic societies, the huge lore of prophetic traditions (*aḥādīṭ*) greatly contributed to the shaping of such shared ideas.

This vast corpus,⁷ that constitutes the second source for Islamic law after the Qur'an, certainly played a special role in the shaping of this common knowledge. These narratives often record opposing opinions about the same issue, with the role of yellow and yellow dyes offering an exemplary case. From the canonical collections, it emerges that yellow was one of the few colours in the early Islamic palette. Its dyes were obtained from plants (saffron, safflower, and *wars*) and could be prepared as perfumed unguents (*ḥalūq*, *ṣufra*). These dyes were probably not very stable, since coloured traces left on the skin are often mentioned and discussed. In an attempt to justify his own practice, Ibn 'Umar said that the Prophet used to dye his beard with the saffron-based perfume called *ḥalūq* – though it is said that the white hairs in his beard were not more than twenty – and recommended that his followers dyed their beards in order to distinguish themselves from Jews and Christians. The Prophet forbade the practice only to pilgrims who had entered the state of ritual consecration (*muhṭrim*). In other traditions, however, it is bluntly stated that God does not listen to the prayers of somebody perfumed with *ḥalūq*, and that angels do not come close to such individuals. It seems that the Prophet himself, when he victoriously entered Mecca, refused to bless those children who had been smeared with saffron perfume. In any case, even though *ḥalūq* was

⁶ A similar kind of social tension in the distribution of knowledge has been examined in the European context, such studies also providing useful methodologies for research in other historical and geographical contexts. See, for instance, Pamela Smith, *From Lived Experience to the Written World. Reconstructing Practical Knowledge in the Early Modern World* (Chicago: Chicago University Press, 2022).

⁷ Each *ḥadīṭ* consists of two parts: the chain of transmitters (*isnād*), used as measure of its reliability (sound, good, weak), followed by the body of the text containing the actual narrative (*matn*). There are six canonical collections, divided into thematic chapters dealing with every minute aspect of a Muslim's life, including hair care, clothing, and perfumes. See G.H.A. Juynboll, *Encyclopaedia of Canonical Ḥadīṭ* (Leiden: Brill, 2007); Pavlovitch, Pavel, "Ḥadīth," in *Encyclopaedia of Islam, THREE*, ed. Kate Fleet, Gudrun Krämmer, Denis Matringe, John Nawas, and Devin J. Stewart: http://doi.org/10.1163/1573-3912_ei3_COM_30163 (accessed 2 November 2023).

counted among the ten things that the Prophet disliked (along with, for instance, wearing gold, dyeing grey hair, playing dice, and hanging amulets), he never prohibited it. As for the wearing of yellow clothes, some traditions present the Prophet as giving clear signs of dislike – but, when one of his followers reacted to such a remark by burning his yellow garments in an oven, telling him that such a drastic measure was not necessary and he could have simply given them to the women of the house.

Yellow clothes were perceived as instruments of seduction. When the favourite wife of the Prophet, ‘Ā’iṣā, offered to promote the cause of another woman, she accosted the Prophet wearing a headscarf dyed with saffron, whose scent she had revived with a sprinkling of water. Slave girls, who populated rich houses for pleasure and entertainment, used to wear yellow, and the same colour was picked by the so-called *muḥannat*, that is, a man “who resembles a woman in gentleness, and in softness of speech, and in an affectation of languor of the limbs.”⁸ These intensely yellow, scented pastes were certainly viewed as a feminine adornment, as they are mentioned among those things that women should renounce while mourning, and their use by a man could be negatively perceived. Al-Maydānī’s collection of proverbs records the invective that the *Anṣār* directed against the Meccans who emigrated with the Prophet (*Muhājirūn*), “more effeminate than one who paints his anus in yellow.”⁹ This colourful expression was also recorded by al-Ṭabarī, as specifically addressed to one of the fiercest opponents of the Prophet, Abū Ğahl b. Hiṣām, in the context of the discussions among Meccans before the battle of Badr.¹⁰

Its association with women seems to be the origin of the unease encountered when seeing yellow – and smelling the same perfume – on men. The association between yellow and gold further strengthens the gendering of the colour, since the wearing of gold is acceptable for women, but not for men. In a specific case, however, the Prophet seems to go further. Speaking either to his favourite or to another woman who happened to ask, the Prophet suggested that she keep aloof from gold and instead wear silver jewels dyed with *wars*.¹¹

⁸ See Hadas Hirsch, “Clothing and Colours in Early Islam: Adornment (Aesthetics), Symbolism and Differentiation,” *Anthropology of the Middle East* 15, no. 1 (2020): 99–114. For the definition of *muḥannat*, see Edward W. Lane, *Arabic-English Lexicon* (Edinburgh: Williams and Norgate, 1863–1893), vol. 1, 815. Hadas Hirsch equates a man who has stereotypically feminine manners (*muḥannat*) with the hermaphrodite (*ḥuntā*), who is actually endowed with female and male sexual organs or, alternatively, has no sexual organs at all. This distinction is crucial in Islamic law, since the latter group is subjected to special regulation. See Marion H. Katz, “Gender and Law,” in *Encyclopaedia of Islam*, THREE, ed. Fleet et al.: http://doi.org/10.1163/1573-3912_ei3_COM_27397 (accessed 2 November 2023).

⁹ Al-Maydānī, *Maǧmu‘a al-amṭāl*, I 251 no. 1339. See also al-Ṭabarī, see al-Ṭabarī, *Ta’rīḫ al-rusūl wa-l-mulūk* (Bayrūt: Mu’assasat al-‘ilim li-l-maṭbū‘āt, 1879), II 147; al-Ṭabarī, *The History of al-Ṭabarī. Volume 7: The Foundation of the Community*, trans. W. Montgomery Watt and M. V. MacDonald (New York: State University of New York Press, 1987), 51–52 (here the translation of the expression is “cowardly wretch”). *Anṣār* were inhabitants of Medina who converted to Islam after the arrival of the Prophet in the city.

¹⁰ Montgomery Watt, *Muhammad at Medina* (Oxford: Clarendon Press, 1956).

¹¹ The information about yellow and yellow dyes is scattered through the six canonical collection of prophetic traditions, concentrated in the books dedicated to adornment and clothing, but attested also in connection with marriage, mourning, divorce, and jihad. For the selection of traditions discussed here, see Wensinck, *Concordance*,

As these examples illustrate, the prophetic traditions deal with many, minute aspects of daily life related to yellow colour and dyes in ways that resulted in a certain freedom of interpretation. While the *Sunna* of the Prophet undoubtedly influenced the general taste for yellow, the number of yellow substances and artefacts remains very limited, and references are rather repetitive. At the same time, the expansion of the Islamic empire enriched the pool of ingredients and techniques used to make yellow, many of which are recorded in technical handbooks dedicated to various crafts.

Inks and other pigments

Recipes for yellow or golden inks are abundant in the technical literature dealing with this subject. Yellow can be produced using either vegetal (e.g. saffron, safflower, etc.) or mineral (orpiment) basic ingredients. For golden inks, the main distinction is between those that contain the actual metal, and those that do not. Several recipes seem to describe a basic, coloured preparation that can be used to make either an ink or a pigment, depending on the need of the moment (writing or painting, respectively).¹² These materials are almost invariably characterised by a lack of explicit theory.¹³ An exception is the description of a theory of colour involving three basic tones and the many possible ways to compound them, found in the *Kitāb al-nuġūm al-šariqāt* (“Book of the Brilliant Stars”). This is a handbook dealing with inks, dyes, and pigments, attributed to a certain Muḥammad ibn ‘Abd Allāh Abū al-Ḥayr and probably composed in the fifteenth century.¹⁴ The work mentions

¹¹ *Continued*

s.v. ‘*ḥimnā*’ vol. 1, 570–71; ‘*ḥalūq*’ vol. 2, 75–76; ‘*za’farān*’ vol. 2, 335–36; ‘*ḥaḍaba*’ vol. 2, 37–38; ‘*sabaġa*’ vol. 3, 243–44; ‘*saffara*’, ‘*aṣfara*’, and ‘*isfara*’ vol. 3, 326–27; ‘*ṣufra*’ vol. 3, 328; ‘*aṣfar*’ vol. 3, 329; ‘*wars*’ vol. 8, 193–94.

¹² For a general overview of Arabic handbooks on inkmaking, see Sara Fani, *Prendi, aggiungi, mescola e scrivi* (Milan: Editrice Bibliografica, 2023); see also Lucia Raggetti, “*Cum grano Sali*: Some Arabic Ink Recipes in Their Historical and Literary Context,” *Journal of Islamic Manuscripts* 7, no. 3 (2016): 294–38; Raggetti, “Ibn al-Ġazarī’s *Book on the Art of Penmanship*: Inks as Instruments of Writing,” *Journal of Islamic Manuscripts* 10, no. 2 (2019): 201–39; and Raggetti, “Ordinary Inks and Incredible Tricks in al-‘Irāqī’s ‘*Uyūn al-ḥaqā’iq*,” in *Traces of Ink: Experiences of Philology and Replication*, ed. Lucia Raggetti (Leiden: Brill, 2021), 154–91.

¹³ Refined colour theories can be found in the writings of eminent Islamic scholars. Al-Kindī and Ibn al-Ḥayṭam, for instance, are renowned for their intuitions about colour perception, previously dominated by Aristotelian theory. See Erick Kirchner, “Color Theory and Color Order in Medieval Islam: A Review,” *Color. Research and Application* 40, no. 1 (2015): 5–16.

¹⁴ There are two editions of this text. The first was published in 1928 in Aleppo, the title page tentatively placing the author’s death in the tenth century and adding to his name the *nisba* al-Dimaṣqī (i.e. from Damascus), though with no further detail about period and identification: see Muḥammad ibn Abī al-Ḥayr al-Ḥasanī al-Dimaṣqī, *Kitāb al-nuġūm al-šariqāt fī ḍikr ba’ḍ al-ṣanā’i’ al-muḥtaġ ilayhā fī ‘ilm al-mūqāt* (Halab: Maṭba’at Muḥammad Rāġib al-‘Ilmiyya, 1928). A more recent edition was published in Morocco in 2008, based on two manuscripts in the Rabat National Library collection. Here the author is identified with the Muḥammad ibn ‘Abd Allāh Abū al-Ḥayr al-Aramiyyūn (the Aramean) mentioned by al-Saḥawī in his biographical dictionary of renowned men in the ninth century from the Ḥiġra. Al-Saḥawī, however, describes him as a Qur’anic reciter, as well as an expert in grammar and law, who died in his twenties, without mentioning any interest in crafts. See Muḥammad ibn ‘Abd Allāh Abū al-Ḥayr al-Aramiyyūn, *Kitāb al-nuġūm al-šariqāt*, taqḍīm wa- taḥqīq al-Sa’īd Benmūsā (Rabat: Širka Frits, 2008); al-Saḥawī, *Kitāb al-ḍawa’ al-lāmi’ li-ahl al-qarn al-tāsi’*, 8 vols. (Bayrūt: Dār al-ġayl, 1992), vol. 8, 119 (No. 271). The edition of 2008 is used here as basis for the English translation. An overview of the table of contents can help contextualise the sections selected for this study: (1) About mastic and sandarac; (2) On dissolving the yellow dye (*al-taṣfir*); (3) Hot “cure” for the oil, extraction of castor oil and almond oil; (4) On the roots of colours and their mixing; (5) On the colours and their composition; (6) On dissolving lac and

four basic colours – yellow, red, black, and white – explaining that their fundamental status issues from the fact that each is produced from a single substance: yellow from “golden orpiment in leaves”; red from “Byzantine arsenic”; black from indigo; and white from “brilliant and pure Byzantine lead white.”

After enunciating the four basic colours, the text describes their preparation. Yellow, for instance, can be obtained by diluting powdered orpiment with a few drops of water, “until its aspect is satisfactory and its thinness is like that of smoke or fine dust.” The text offers an empirical clue to help practitioners understand when the state of the preparation is ideal, that is, a peculiar, chain-like disposition of particles on the grinding stone.¹⁵

Colours can also be compounded, either from the primary ones with additional substances, or from substitutive ingredients, in case simple primary pigments are not available. In the case of yellow, a vegetal ingredient (saffron) may substitute for the mineral one (orpiment), while the easily available lead white is used to create difference nuances of colour: “so it follows from this that yellow may also be produced without orpiment, if this is unavailable: grind lead white and throw saffron in it until the colour pleases you.”¹⁶

To explore the material reality behind the text, the *UseFool* project team attempted to replicate these procedures for making primary and compound yellow (Figure 1). In practice, we were unable to observe the peculiar chain-like disposition of ground orpiment. As for compound yellow, we combined saffron and lead white in different proportions (1:0, 1:1, 1:2, and 1:3, see Figure 2) in order to identify the best imitation of the orpiment-based primary yellow (Figure 3). After just a few days, we were able to observe differences in the pigments’ durability. Primary yellow, for instance, proved to be very stable, whereas the compound yellow quickly faded, even when not exposed to light, probably due to the deterioration of its organic component.

The *Kitāb al-nuḡūm al-šariqāt*’s sequence of compound colours is followed by a remarkably long and varied lists of inks, pigments, and dyes.¹⁷ This section is characterised by an apparent lack of order and some repetition. Moreover, it is not included in the 1928 edition of the text, suggesting the possibility that this is an erratic block of text – or more than one – that became attached to the section on compound colours in the course of its transmission.

¹⁴ *Continued*

safflower and the extraction of the impurity from this; (7) On the knowledge about mixing lapis lazuli, its washing and purification; (8) On the knowledge about mixing any colour with dissolved sandarac and the manner to treat the oil; (9) On the washing of oils and what is necessary to do – as it is done with parchments and other things treated with oil – so that the writing can smoothly go over them; (10) On dissolving gold and silver and writing with these two. In general, the *Kitāb al-nuḡūm al-šariqāt* focuses on the preparation of basic substances for painting, dyeing, and writing, with particular focus on resins and oils, probably used to prepare varnishes. For the complete English translation of the relevant sections, chapters 2 and 4–6, see Appendix 1.

¹⁵ *Kitāb al-nuḡūm al-šariqāt*, Appendix 1 (Chapter Four). A similar recipe is attested in al-Zarḥūrī and al-‘Irāqī, see Raggetti, “Cum Grano Salis,” 331; Raggetti, “Ordinary Inks,” 167–68.

¹⁶ *Kitāb al-nuḡūm al-šariqāt*, Appendix 1 (Chapter Five).

¹⁷ That is: yellow, pistachio green, blue, violet, rose pink, “Chinese” colour (a sort of blue), orange (with three different preparations), lapis lazuli blue, and crop-like green.



FIGURE 1 Writing samples realised with primary yellow from pure orpiment (left) and compound yellow from lead white and saffron (right). Photo: L. Raggetti.



FIGURE 2 Different proportions between saffron paste and lead white (from the left, 1:0, 1:1, 1:2, and 1:3). Photo: L. Raggetti.



FIGURE 3 Comparison between writing samples realised with primary yellow (right) and compound yellow with different proportions between lead white and saffron. Photo: L. Raggetti.

Moving on to golden inks, the *Kitāb al-nuḡūm al-šariqāt* includes both recipes that use real gold, and those that use mineral (orpiment, alum), vegetal (safflower, saffron, turmeric), and even animal (bile, yolk) substances to obtain an artificial gold colour. Particularly in the case of mineral ingredients, the text makes frequent use of *Decknamen*, such as “eagle” and “Jupiter” for metals. Almost invariably, the inks listed in this section are called *liqa*. There is some evidence to suggest that this term also covers the semantic spectrum of varnishes. For instance, in one of the golden preparations described in the *Kitāb al-nuḡūm al-šariqāt*, the dry ingredients are mixed with linen oil, then cooked in a closed vessel with just a hole in the top to allow stirring of the contents. Though no specific reason is given for closing the vessel, this was probably to avoid the dispersion of volatile components and prevent the oil from catching fire.¹⁸ This same golden preparation is said to be

¹⁸ Similar indications are scattered throughout Western mediaeval and early modern writings, perhaps signalling the transmission of technical knowledge over long periods and through different languages and cultures: see Mariolijn Bol, *The Varnish and the Glaze: Painting Splendor with Oil, 1100–1500* (Chicago: Chicago University Press, 2023), 63–67. In the following section focusing on al-Tamīmī’s perfumery handbook, there is a recipe for a preparation meant for “coating and a plating” (*ṭilā’ wa-tamwīh*, No. 244) that prescribes using a closed vessel.

suitable for writing not only on paper and parchment, but also on glass and pottery. In the section dealing with the yellow dye called *taṣfir*, we read that the same basic preparation may serve either as ink, when mixed with gum arabic, or as a varnish, with the addition sandarac resin. The recipe adds a very specific and rather peculiar application for this varnish, namely the painting of the wooden clogs used in the hamman.¹⁹

In sum, reading for yellow in the *Kitāb al-nuḡūm al-šariqāt* reveals that this handbook sets down a pragmatic and material-oriented theory of colours, directly followed by recipes for preparing pigments that can be adjusted for use as either inks or varnishes. Taken together with the detailed descriptions of preparations, this suggests a strong interaction between practice and theory, with ideas about colour clearly informed by the reality of working with specific materials.

Yellow for beautification and disguise

Two completely different reasons for adding yellow to skin or hair emerge from Arabic technical sources. First is the wish to beautify one's appearance, for instance by dyeing the hair (especially when white) a different colour. Moreover, a golden shine adds a touch of refinement to the henna used for body painting. Second, those with criminal intentions could make use of skin or hair dyes to disguise stolen animals or kidnapped people, in order to smuggle them out of the country undetected, even by their owners or closest relatives.

Starting with the cosmetic application of gold or yellow dyes for skin and hair, some interesting recipes can be found in the *Kitāb 'uyūn al-ḥaqā'iq wa-īdāḥ al-ṭarā'iq* ("The Best of True Facts and the Explanation of Their Ways"), a technical handbook on the manipulation of natural substances for entertainment, deception, and craft composed by the renowned thirteenth-century alchemist al-'Irāqī.²⁰ Following his chapter on inks and amidst all sorts of special effects and illusionistic tricks, the twenty-fifth chapter describes a number of dyes and pigments (*ṣibāḡāt wa-ḥidābāt*)²¹ meant for cosmetic application. The hair dyes

¹⁹ Though an analysis of the presence of yellow and golden inks in Arabic manuscripts is beyond the scope of this study, it is worth mentioning some aspects, in particular about yellow. The Andalusian Qur'anic reader al-Dānī (ninth-tenth century) reports the concerned words of one of the earliest grammarians and Qur'anic reciters, Abū 'Amr b. al-'Alā' al-Baṣrī, (d. 770/771), about the dotting of Qur'ans, a practice that could easily introduce ambiguity into the text rather than enhancing its clarity. The reciter accounts for several different local practices of dotting with colours. Medina stands as the most polychrome tradition, where yellow dots were used to mark the hamzas. See "al-Dānī," in *Encyclopaedia of Islam*, 2nd ed., ed. P. Bearman, Th. Bianquis, C.E. Bosworth, E. van Donzel, and W.P. Heinrichs: http://doi.org/10.1163/1573-3912_islam_SIM_1689 (accessed 16 July 2023). Apart from technical handbooks dealing with the copying of the Qur'an, the flyleaves of some manuscripts may exceptionally and explicitly preserve those rules that were part of the knowhow of the craftsmen, even in the absence of the oretical explanation. In particular, a recent study investigates three such scribal appendices in Mamluk luxury Qur'ans. One describes, among other things, the very specific case in which yellow is used to write vowel signs or mark the *tašdid*, again in connection with different reading traditions of the Qur'an. See Marijn van Putten and Jan Just Witkam, "Mamlūk Qur'ān Manuscripts: The Scribal Appendices," *Journal of Islamic Manuscripts* 14 (2023): 279–355.

²⁰ Eric J. Holmyard, "Abu' l-Qāsim al-'Irāqī," *Isis* 3 (1926): 403–26; Raggetti, "Ordinary Inks."

²¹ The use of the two Arabic terms does not seem to consistently take into account solubility, or the lack thereof. The impression is that they may also be used as synonyms.

are all black, while the substances prepared to refine henna paintings on the hands use a more varied palette, including not only gold and silver, but also lapis lazuli, cinnabar, and a multi-coloured dye called “peacock dye.” This chapter includes descriptions of three different pigments that can be added to henna in order to give it a metallic shine, making it similar to gold. Strikingly similar recipes for henna additives appear in medical literature, including Avicenna’s *Canon*. The medical dimension of cosmetics emerges even more in the handbooks on “erotic medicine,” that is to say, Galenic pharmacology specifically applied to sexual matters, perfumery, cosmetics, and literary anecdotes about sex and sexual pleasure. Particularly interesting is a later work by Ibn Kamāl Pāšā, *Kitāb ruḡū’ al-šayḥ ilā šibāhī* (“The Return of the Elder to His Youth”).²² These parallel attestations are of great help in understanding the development of the textual tradition and interpreting the recipes.

Since al-‘Irāqī’s Arabic text has not previously been edited, I provide first editions of several of his recipes in Appendix 2a, based on my examination of ten manuscript witnesses.²³ In these recipes, we encounter the usual hurdle of identifying ingredients, thanks to a peculiar configuration of variants. For instance, one procedure requires that a plant should be distilled, producing two different fractions in the distillate: first a transparent, watery one to be discarded, then an intensely red one to be mixed with henna:

Preparation of a golden pigment

Some fresh yellow loosestrife (lit., “Nabtean reed”) should be taken along with its roots, and cut like fingers; then poured in a glass gourd, and an alembic should be mounted on top of it. Connect it and distil and its water will be raised from it; after this, a water red like blood will distil, knead the henna with it, and use it to dye the palm of the girl. Leave it [to dry] like you leave henna, and it comes out gold.²⁴

The manuscript tradition preserves two different readings for the first plant mentioned in this recipe: *qaṣab nabaṭī* (lit., “Nabatean reed”), and *qaṣab dahabī* (lit., “golden reed”). The variant *qaṣab dahabī*, however, might be more than a simple *lectio faciliior*, inspired by the goal of the recipe. This “golden reed” can, in fact, be identified with yellow loosestrife, a herb whose leaves actually release a yellow dye, while a brownish dye is extracted from the roots. The first variant has been chosen on the basis of external criteria, namely the mention of this herb

²² Ibn Kamāl Pāšā, *Ruḡū’ al-šayḥ ilā šibāhī* (Marrakeš: Dār al-ḥayā, 2012), 189–93. For a general introduction to the author, see V.L. Ménage, “Kemāl Pašā-Zāde,” in *Encyclopaedia of Islam*, 2nd ed., ed. P. Bearman, Th. Bianquis, C.E. Bosworth, E. van Donzel, and W.P. Heinrichs: http://doi.org/10.1163/1573-3912_islam_COM_0480 (accessed 29 November 2023). For the translation of these passages, see Appendix 3.

²³ The witnesses are: B (MS Berlin We II 1375); C (MS Istanbul Carullah 1549); D (MS Dublin Chester Beatty Ar. 4019); K (MS King Saud 6230); L (MS British Library Add MS 23390; Lit, Lithographic edition Cairo); P (MS Princeton Garrett 544H); T (MS Toronto Fischer Library 142); W (MS London Wellcome Arabic 506); Z (MS Bakhu A-375). Though it is possible to loosely group some of the manuscripts in the tradition, it is not possible to detect stemmatic relations among them. Variant readings, therefore, have to carefully be evaluated in their context, also taking into account the material dimension and the possibility of replication in the laboratory.

²⁴ Translated from the *editio princeps* in Appendix 2a.

in a section of Avicenna's *Canon* dealing with cosmetics, particularly dyes for making hair blond (*mušaqqirāt*).²⁵

The second recipe for a golden henna additive includes a small amount of actual gold, along with realgar and vegetal resins (sandarac, sarcocolla). Gall is an ingredient that often appears in recipes for ink making, sometimes as a literal ingredient to enhance the ink's shine, sometimes probably as a *Deckname* for other ingredients, especially in the context of invisible inks.²⁶ Here, the various ingredients are simply ground and mixed together in a liquid medium, green garlic water:

Preparation of a pigment that confers the colour of gold

Three mithqal of red sarcocolla should be taken, along with one *dāniq* of gold, three mithqal of realgar (red arsenic), three mithqal of carp bile, one mithqal of gum arabic, half a mithqal of sweet yellow clover seeds, two mithqal of sandarac; the simples should be ground and kneaded with water of green garlic and cow yellow bile, then used to dye the hands, and this will come out like red gold.²⁷

A parallel attestation of this recipe is clearly recognisable in Ibn Kamāl Pāšā's dedicated chapter in the *Ruḡn al-šayḥ* (Appendix 2b). The edition of al-'Irāqī's text (Appendix 2a) shows how two homeoteleuton mistakes made while copying manuscripts (that is, skipping text that appears between two occurrences of the same word, a frequent mistake in repetitive texts like recipes) could have easily led to loss of characteristic ingredients, either metallic (gold and realgar) or vegetal (sweet clover seeds and sandarac).

In the third and last recipe of this kind, all the ingredients are of vegetal origin. The primary ingredient is acacia pods, to be buried in manure – that is, exposed to a mild but constant heat – for just a few days. Saffron might substantially contribute to the overall “yellowness” of this plant-based imitation of gold's shine:

Preparation of the pods that end up like gold

Green pods of acacia nilotica should be taken, ground and buried in the manure for three days; then take this out, one part of ground African rue should be taken, along with one part of saffron, and one part of henna. Everything should be mixed together and covered for three days. Then the hand should be washed clean and dyed with it, and so this will become like gold.²⁸

As for the application of yellow dyes on skin and hair moved by criminal intentions, in his anthology written to unveil the tricks of charlatans and swindlers, *Muḥtar fī kašf*

²⁵ This is the recipe included in Avicenna's *Canon*: “They say that [one if these dyes is] the fluid sap (*siyyāla*) of fresh Nabatean reed, from which the peel has been removed. If a fire is kindles at its extremity, it will tinge like gold. In the same way, it makes iron rusty along with water of vitriol, being added to it, as it is added to henna.” Ibn Sīnā, *Qānūn fī-l-tibb*, 3 vols., ed. Muḥammad Amīn al-Ḍanāwī (Beyrut: Dār al-Kutub al-Ilmiyya, 1999), vol. 3, 352. Stefano Carboni identifies the plant with a local variant of common reed: Stefano Carboni, *The Wonders of Creation and the Singularities of Painting* (Edinburgh: Edinburgh University Press, 2015), 273.

²⁶ See Raggetti, “Inks as Instruments,” 215 and 223; and Raggetti, “Ordinary Inks,” 179.

²⁷ Edition in Appendix 2a.

²⁸ Edition in Appendix 2a.

al-asrār, al-Ġawbarī (thirteenth century) describes a criminal twist in the application of hair dyes and skin pigments. Crooked horse copers, for instance, used to dye the stolen animals in order to sell them at leisure, possibly even under the nose of the former owner.²⁹ Al-Ġawbarī boasts a personal friendship with some of these cunning and brazen dealers, whom he met in Upper Egypt and in the Maghreb, particularly in Tunis. Horses can be dyed black, white, red, and yellow, or a speckled colour. There are, however, technical limitations, and a light colour like yellow can be effectively used only on a white horse.³⁰ Henna is used for both red and yellow, mixed with red ingredients (pomegranate blossoms and alkanet) when the goal is a red dye,³¹ and reinforced with saffron if one wishes a yellow dye. The presence in both recipes of different kinds of alum may serve as mordant for the dye.

Chapter 17 – Exposé of the Tricks of Those Who Dye Horses

[17.4] Section Three of the Exposé of Their Tricks

Exposé: To dye a horse a very deep dark red, they take four parts sweet henna, one part alkanet, one part Egyptian pomegranate blossoms, one part henna leaves, one part leaves of cloves, and one part Yemeni alum. All this is pounded till smooth, then covered with water and boiled till reduced by a quarter. The horse will turn an intense red, as pretty as can be.

[17.5] Section Four of the Exposé of Their Tricks

Another example: To dye a horse yellow, they take one part alkanet, one part henna, one part saffron, one part red alum, one part Egyptian ramek, and one part basil seed. All this is pounded till smooth, covered with water, and boiled till reduced by a quarter. The horse is washed with this and it turns a beautiful yellow. A horse can only be dyed red or yellow if it was white to begin with.³²

Similar stratagems can be used to disguise people in order to smuggle them out of the country, in the case either of fugitives wishing to flee, or those who have been kidnapped for sale as slaves. Another talent of these smugglers is the ability to remove freckles and other unsightly marks left by leprosy or tetter. Al-Ġawbarī met some representatives of this guild in Anatolia, whose speciality was dyeing white people black, so that they could pass as Nubians or Abyssinians. The disguise may involve the whole body or just parts of it (e.g. face and hair), and only in one case is the dyeing process meant to obtain an intense yellow colour for the beard. In this case, the pigmentation derives from henna and dyer's madder:

²⁹ For a complete edition and translation, see Jamāl al-Dīn 'Abd al-Raḥīm al-Jawbarī, *The Book of Charlatans*, ed. Manuela Dengler, trans. Humphrey Davies (New York: New York University Press, 2020), in particular 288–93. Al-'Irāqī mentions other stratagems to steal cattle and disguise, as well as tricks to produce temporary blemishes in order to lower their price, see Lucia Raggetti, *Un coniglio nel turbante. Intrattenimento e inganno nella scienza arabo-islamica* (Milan: Editrice Bibliografica, 2021), 206 and 210–12. Dyeing a stolen horse's hair, however, seems unique to al-Ġawbarī.

³⁰ Al-Jawbarī, *Book of Charlatans*, 290–91.

³¹ *Alkanna tinctoria*, a herbaceous flowering plant in the borage family *Boraginaceae*, also called dyers' bugloss, orchanet, Spanish bugloss, or Languedoc bugloss. A red dye is extracted from its roots.

³² Al-Jawbarī, *The Book of Charlatans*, 290–91.

Chapter 18 – Exposé of Their Tricks; Example: Those Who Dye Humans

[18.5] Section Five of the Exposé of Their Tricks

Another example: To turn a beard blond, they take one part each of henna and crushed madder, knead this well, and let it ferment. Then they dress the beard with it and it turns a very intense reddish blond.³³

Gold and its imitations do not find space in this peculiar kind of dyeing, which has more functional than aesthetical purposes.

Perfumed garments in yellow or gold

Yellow and gold also feature in recipes for perfumed goods, as illustrated by the text translated in Appendix 3: al-Tamīmī's (d. 1009) *Ṭīb al-'arūs wa-rayḥān al-nufūs fī šinā'at al-'uṭūr* ("The Perfume of the Brides and the Scent of the Souls in the Art of Perfumes"), a comprehensive handbook of perfumery, in which perfumes are applied to cosmetics and other materials, including textiles.³⁴ The author was a renowned tenth-century physician, who was born in Jerusalem and later moved to Egypt. His perfumery handbook is an organised collection of articulated, refined, and very detailed recipes, involving numerous ingredients and diverse techniques.³⁵ Their connection with a courtly environment is explicitly stressed, and in more than one way. In many recipes, for instance, the author mentions collections ascribed to eminent figures of the early Abbasid court (for example, members of the powerful Persian family of the Barmakids) or even the Caliph himself, in particular al-Mu'taṣim.³⁶ The use of some perfumed preparations, along with transmission of their recipes, is often generally attributed to members of the caliphal court, even that of the Umayyads (see Appendix 3, No. 239).

³³ Al-Jawbarī, *Book of Charlatans*, 298–99.

³⁴ See al-Tamīmī, *Ṭīb al-'arūs wa-rayḥān al-nufūs fī šinā'at al-'uṭūr*, taḥqīq wa-dirāsa Luṭf Allāh al-Qārī (Al-Qāhira: Maṭba'a Dār al-Kutub, 2014). The translation in Appendix 3 preserves the progressive numbers assigned to the recipes by the editor of the Arabic text. A digital copy of the text is available at: <http://www.islamicmanuscripts.info/reference/index.html> (accessed 8 August 2023).

³⁵ Al-Kindī's interest in distillation applied to perfume making linked Arabic perfumery to alchemical practice: see Karl Garbers, *Kitāb Kīmīyā' al-'iṭr wa-t-taṣ'īdāt: Buch über die Chemie des Parfüms und die Destillationen von Ya'qūb b. Ishāq al-Kindī. Ein Beitrag zur Geschichte der arabischen Parfümchemie und Drogenkunde aus dem 9. Jahrh. P.C.* (Leipzig: Kommissionsverlag, 1948). More recently, Anya King's monograph shows how an aromatic substance, musk, unfolds into cultural and social history: Anya King, *Scent from the Garden of Paradise: Musk and the Medieval Islamic World* (Leiden: Brill, 2017). In his introduction to al-Tamīmī's edition, al-Qārī gives a long list of books on perfumes, many of which are lost: al-Tamīmī, *Ṭīb al-'arūs*, 22–28.

³⁶ This Caliph is also mentioned as patron of the translation of the *Treasure of Alexander*, though he never actually supported specific translations. See Dimitri Gutas, *Greek Thought, Arabic Culture: The Graeco-Arabic Translation Movement in Baghdad and Early 'Abbāsīd Society (2nd–4th/8th–10th centuries)* (London: Routledge, 1998), 123; Lucia Raggetti, "The Treasure of Alexander: Stories of Discoveries and Authorship," in *Education Materialized: Reconstructing Teaching and Learning Contexts through Manuscripts*, ed. S. Brinkmann, G. Ciotti, and S. Valente (Berlin: De Gruyter, 2021), 279–314 (esp. 283–8). Occasionally, al-Tamīmī mentions the sources of this alleged caliphal handbook on perfumery, who include physicians, geographers, and literates: al-Tamīmī, *Ṭīb al-'arūs*, 23–26. Among other member of the Abbasid family involved in the composition of perfumery books, al-Mas'ūdī, in his *Ahbār al-zamān*, mentions Prince Ibrāhīm, son of the Caliph al-Mahdī (d. 785).

Al-Tamīmī's *Perfume of the Brides* is organised by kind (e.g. distilled waters, oils, washes), and progressively moves from more basic preparations to more complex recipes.³⁷ An entire chapter is devoted to the dyeing and, more generally, beautification of scented garments, including gold spraying, printing blocks, and decorative inscriptions.³⁸ The dyeing and perfuming processes are constantly intertwined in practice: aromatic substances are mixed in the dyeing bath, while the drying phase serves to expose the fabric to scented fumigations. Perfumes are volatile substances, so the clothes must be stored in sealed vessels that have already been exposed to aromatic fumigations for better preservation. From the recipes, these dyed and perfumed garments appear as luxury products, an impression supported by the use of gold or refined artificial substitutes. Even at court, however, it might be preferable to produce lavishly dyed, golden garments using a relatively small amount of gold filings. In the context of recipes including gold, one may remark the use of medical terms to indicate the preparations (*'ilāġ*, "cure" and *dawā'*, "medicament"), a semantic shift that can be frequently observed in alchemical texts.

Al-Tamīmī's handbook once more reveals the proximity between inks and dyes, as some preparations can be used interchangeably for either dyeing or writing, on fabric or other media such as ceramic, metal, or wood. The relationship between dyeing and writing, however, is more subtle than alternative uses of the same substance. One of the recognisable shared traits is the practice of burnishing golden writing after it has dried, a technique also used for textiles, with the additional advice to first stretch them over a pillow. The technique of using printing blocks to write in gold with actual golden leaves and glue transposes onto fabrics the methods of chrysography originally meant for paper.³⁹

Even more strikingly, when it comes to the imitation of gold based on mineral ingredients, several of al-Tamīmī's recipes are reminiscent of a peculiar ink recipe to imitate gold. The ink recipe prescribes distilling equal parts of *ṭalq*, red vitriol (*qalqant*), and honey; the distillate should be left to age for twenty-one days, then mixed with gum arabic and used to write.⁴⁰ Two of al-Tamīmī's recipes (Nos 238 and 239) repurpose the combined use of red vitriol and distilled honey, in one case mixed, in the other applied in different phases, to dye fabric gold. The procedure is completed by burnishing the fabric, with no mention of gum arabic or any other binder. The second of these recipes includes a variation in the procedure, in which marcasite can either be added to the mixture, or

³⁷ Al-Tamīmī, for instance, devotes a specific section to the preparation of *naḏūḥ* and *ḥalūq* perfume. From the variety of recipes, it appears that these two names indicate a kind of preparation, rather than a specific perfume. See al-Tamīmī, *Tib al-'arūs*, 137–52.

³⁸ For inscribed luxury objects in the early Abbasid period, see Yaron Klein, "Abu Tayyib al-Washsha and the Poetics of Inscribed Objects," *The Journal of American Oriental Society* 138, no. 1 (2018): 1–28; see also Ibn al-Waṣṣā', *Das Buch des buntbestickten Kleides*, 3 vols. (Leipzig and Weimar: Gustav Kiepenheuer Verlag, 1984), vol. 2, 140–91.

³⁹ See, for instance, Raggetti, "Cum Grano Salis," 312–14.

⁴⁰ See Raggetti, "Inks as Instruments," 222–23 and 230–38.

simply ground and mixed with gum arabic. Another recipe for an ink used to write on silk and other textiles, as well as on parchment (No. 243), mentions all three ingredients, but in different proportions: that is, three parts of honey and one part each of red vitriol and *ṭalq*. The steps in the procedure are also the same (aging and distillation), but arranged in a different sequence. The mixture has to be buried in manure for nine days, perhaps accounting for the greater quantity of honey required to provide the necessary moisture. It is then distilled, and that which emerges from the alembic can be mixed directly with gum arabic and used to write.

The last recipe of this anthology (No. 247) prescribes henna to intensify a saffron-based yellow dye. Apart from the interaction between the two pigments, this may also refer to the practice of refreshing colour that has worn off a garment. On a more popular level, the handbooks for the inspector of the market refer to this use and to the fraudulent practices of the dyers. Dyers might try to save on ingredients at the expenses of the colour and its stability, or directly rent out a garment while it was in their care.⁴¹

Conclusion

Yellow stands out in the mediaeval Arabic palette both in the frequency of its appearances and in its range of possible applications and interpretations, as witnessed by a great variety of primary sources. Yellow was perceived as related to gold within the lexicographic tradition, a relationship reflected in the technical literature where yellow dyes and pigments often share characteristic ingredients with recipes for preparing artificial gold. These included both vegetal and mineral substances. Among mineral and metallic ingredients, orpiment seems to have been the most frequent substitute when gold itself was not involved in the preparation. Within the vegetal kingdom, saffron, safflower, and yellow sandal, were some of the most commonly recurring ingredients associated with yellow. Saffron is scented, and its frequent presence in perfume recipes adds a synesthetic dimension to yellowing techniques – suggesting that colour and scent were inextricably connected. Yellowing preparations also moved somewhat fluidly between different crafts, from ink-making to textile dyeing, with only small adjustments required when passing from one application to another. Cutting across different levels of society, and applied as readily to the disguising of stolen horses as to the production of luxury objects for the court, this knowledge demonstrated both technical and social mobility.

The same diversity and fluidity extends to the scholarly methodologies necessary to plumb such a wide array of source material. The wide diffraction of yellow in Arabic literature underscores the need for an inclusive approach to sources: one that considers not only technical literature but also literary texts, without underestimating the

⁴¹ See 'Abd a-Raḥman ibn Naṣr al-Šayzarī, *Kitāb nihāyyat al-rutba fī ṭalab al-ḥisba*, ed. Ismā'īl al-Tānawīyya (al-Qāhira: Maṭba'a laḡnat al-ta'līf, 1946), 72.

religious and cultural context – as demonstrated by the place of yellow and gold in Prophetic traditions. This plurality calls for a multi-faceted methodological approach: thorough philological study of texts, made available through critical editions and translations; historical analysis of the social context within which such knowledge and practices were embedded; and the use of experimental reconstruction to offer deeper insight into the material reality behind the text. The translations and editions gathered in the Appendices offer one step towards this pluralist goal.

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Appendices

Appendix 1: *Book of the Brilliant Stars* (English translation)

*Chapter two: on dissolving the yellow dye (al-taşfir)*⁴²

The way of doing it is that you take eleven *ratl* of hot oil, five *ratl* of colophonia, three *ratl* of aloe *naqarī* or aloe from Socotra (or, alternatively, one *ratl* of *naqarī* and two *ratl* of aloe from Socotra); place it in the oil on a quiet fire; then pour the colophonia over it, piece after piece, wait a bit until it completely dissolves in the oil. After this, wait for one hour and pour the aloe over it, piece after piece. When you are finished, pour it down with what remains of the hot oil, bit after bit. When the aloe is finished, wait a bit until you see that the foam breaks in small pieces on the surface of the oil; don't move it then, but collect them [the foam pieces] in the ink pad until nothing of it is left; then throw three ounces of logwood in it, tie up one ounce of ground turmeric (*kurkum*) wrapped in a piece of cloth, throw it into the oil, and try it on a leaf of tin while the fire is burning quietly. Then, four hours after this, once you have tried it for the sake of its colour and its consistence, when it becomes like fat, pour out the hot oil; if there is an excess of red, increase the turmeric; if, instead, there is an excess of yellow, increase the logwood. Then try it regularly until it takes a nice consistency. Remove it from the fire, wait for one hour after that you have removed the logwood from the oil. When it has settled a bit, move it to another vessel, strain it with a cloth, store away this oil and the residue; then add hot oil to the residue, boil it, purify it, and store this oil away in another vessel, whereas what remains of its residue should be thrown away after this, because there is no useful aspect in it.

*Chapter four: on the roots of colours and their mixing*⁴³

You should know that the roots of the colours are four. They are: yellow, red, black, and white. As for the yellow, it derives from the golden orpiment in leaves; as for the red, it derives from Byzantine arsenic; as for the black, it derives from indigo; as for white, it derives from brilliant and pure Byzantine lead white; as for their extraction (*taşwīl*), it is divided in four sections.

First section, on the extraction of orpiment (*zarnūḥ aṣfar*, lit. yellow arsenic)

The way of doing it is that you take the golden orpiment, cut it with the scissors in pieces of the size of lentils; crush it finely until you like its thinness; then let the water slowly drip on it, go on to the greatest length in grinding it as much as you can, until its aspect is satisfactory and its thinness is like that of smoke or fine dust. So, when it is in this way, then it is ready. The sign of its being ready is that, when you turn the stone used to crush (*fibr*) in it and lift it with it, you will find that on top of it there are a sort of thin threads, like chains, in the shape of a tree, and this is the sign that it is finished. When, instead, you raise it with the

⁴² *Kitāb al-nuḡūm al-šariqāt*, 16–18.

⁴³ *Kitāb al-nuḡūm al-šariqāt*, 20–21.

stone used to crush it and see that it is smooth or do not see anything on it, then it is not ready, and God knows best.

Chapter five: on the colours and their composition (*tarkīb*)⁴⁴

You should know that, among the colours, there are those compounded from two roots, but there are also those compounded from more [than two]; these ways of compounding bring about different colours, so it derives from this that yellow may also be produced without orpiment, if this is unavailable: grind lead white and throw saffron in it until the colour pleases you. From this comes pistachio green, this is that you take washed orpiment, place it on a cutting board, crush it with water, and some indigo mixed with water should be added slowly, then crush it until it becomes thin and its colour pleases you. The best green can be obtained by adding a quarter mithqal of indigo for each mithqal of orpiment. From this the blue colour, and the way of preparing it is to take as much white lead mixed with water as you want, place it on a cutting board, and grind it with water, then add a bit of indigo mixed with water to it; then grind it until its colour pleases you. You can obtain the best violet when you take cinnabar mixed with water, place it on a cutting board, grind it with water, and add indigo to it – one quarter of the amount of cinnabar – and grind it until its colour pleases you. The best one can do is adding more or less one quarter of indigo. From this, the pure colour of the rose, that is called *qamarī*; this is that you must add a bit of Byzantine white lead to cinnabar until its colour pleases you. From this, the Chinese colour, and this is that you must take the Iraqi verdigris you want, mix it with water until this pleases you, then add a bit of lead white until the colour pleases you. From this, the orange colour, and this is that you must slowly add cinnabar to orpiment mixed with water, then you should grind it until its colour pleases you. Another orange colour: at the beginning, you should grind orpiment with gallnuts water extracted first for the dye, and mix it with water until the colour pleases you. From this, another orange colour of the outmost beauty: you should take pure realgar cleansed from the intense red and the black, place it on a cutting board, and crush it with water until it is pleasing and has reached the apogee of thinness, then store it away and this is the apogee [of beauty]. From this, the blue colour of lapis lazuli: this is that you take equal amounts of copper dross (*rasih̄tanġ*) and antimony, crush them both with “the eagle” [i.e. sal ammoniac],⁴⁵ and mix a bit of white lead with it until its colour pleases you, and this is the apogee [of beauty]. From this, lapis lazuli colour: this is that you must take as much lime as you want – and it must be hot – crush it, sieve it, for each ounce of it you should add two dirhams of gum Arabic and half ounce of Yemeni alum, then add some water from the indigo jar and logwood water to it, until its colour pleases you; it should dry in the shade and this is the apogee. When you want to use it, grind it with water until it becomes this and kohl, then you use in everything you want. From this, another colour, crop-

⁴⁴ *Kitāb al-nuġūm al-šariqāt*, 25–31.

⁴⁵ Alfred Siggel, *Arabisch-deutsches Wörterbuch der Stoffe aus den drei Naturreichen* (Berlin: Akademie Verlag, 1950), 84; see also Alfred Siggel, *Decknamen in der arabischen alchemistischen Literatur* (Berlin: Akademie Verlag, 1951), 45.

like green: grind cinnabar with gallnuts water and vinegar, then add a bit of saffron and gum to it. From this, the yellow colour: irrigate orpiment with gallnuts and “pigeon’s leg,”⁴⁶ until its colour pleases you.

Musk-like ink (*liqa*): one should take orpiment, grind it with gum water and green gallnut water, then dry it and take one part of it and a quarter of it of indigo, it should be crushed with green coriander water until its colour pleases you.

Golden ink: one should take three dirhams of gum ammoniac, soak it for one day and one night in logwood water; then knead it with your fingers in a vessel, then purify it, and add one dirham and a half of saffron, write with it and this will be the apogee [of beauty].

Green ink: one should take Iraqi verdigris, grind it with the same quality of gum arabic with gallnuts until it becomes thin; then pour vinegar on it and write with it.

Golden ink: take one part of vitriol from Cyprus, half of its quantity of eagle [i.e. sal ammoniac] crush them both well and place them in bull gall, close the top [of the vessel] and hang it in the hot sun for three days, then you will find what you wish in it, take it and write with it, and this will be the apogee [of beauty].

Red ink: one should take one part of sericon and one part of indigo, crush them first separately and then together, beating it with gum dissolved in water, use it and its colour will be amazing.

Turquoise ink: Iraqi verdigris crushed with lemon water until its maximum, gum dissolved in water should be added to it, when used, its colour will be amazing.

Red ink: one should take equal parts of yellow sulphur in mineral form and white alum, crush them well; then put them in a suitable glass vessel and cover it with water, and they will sediment in the recipient; then, make it in discs similar to coins. When you want to write, dissolve them in gum water and write with it.

Cinnabar ink: five dirhams of indigo should be taken and crushed, two dirhams of Iraqi verdigris should be added to it and crushed well; add gum water to them and write with it.

Silver ink: take ten dirhams of Jupiter [i.e. tin] and two dirhams of mercury; if you take one part of mercury and one part of Jupiter [i.e. tin], fix them and use them with gum water, it will become a wonderful silver; write with it, burnish it, and it will be the apogee [of beauty].

Pomegranates ink: safflower crushed with the same amount of acid vinegar, impose this on it for a while to clarify it; purify it and mix some saffron with it, dilute with gum and write with it.

Golden ink: some red anemones must be taken, the black part should be removed and placed in a cauldron to boil, until it dissolves and its colour pleases you; then remove it [from the fire], let it cool for quite some time, purify it, and throw some green myrtle into it in the quantity of two dirhams, along with some dissolved gum in the quantity that is needed, then it will be the apogee [of beauty].

Radiant golden ink: one part of red anemones should be taken, boiled until their peculiar substance comes out, then it should be purified and some green myrtle should be thrown into it, the weight of one dirham, and the necessary amount of gum arabic, write with it and this will be the apogee [of beauty].

⁴⁶ Another name for logwood or other plants used for red dyes.

Green ink: ten dirhams of orpiment should be taken with two dirhams of indigo and crushed well – when you want to have it more brilliant, increase the amount of orpiment until it tends to a brilliant green; dilute it with gum and write with it.

Green ink: take equal parts of orpiment and indigo, crush them to the final limit; then crush it a bit with water until its colour pleases you; dilute it with gum and write with it; and if you use two parts of orpiment and one part of indigo, it will turn out of another colour. The craft in all this is in the extraction and in the proportion between the gum and the Iraqi verdigris; when it is diluted with it by grinding with gum dissolved in acid vinegar, then another colour will emerge from it. While saffron, when it is crushed with force and dissolved gum is added to it, then a beautiful colour will emerge from it.

Golden ink: take turmeric (*kurkum*) roots, crush them well without water up to the maximum and then with water; then take two ounces of sandarac, three ounces of crushed turmeric, and the root of “gold testicles” (?) – that is a plant that grows in the proximity of water, its leaves are similar to coriander leaves, it is said that it is fettered henna – take one ounce of its root, grind it as you did with coriander; unite everything in a vessel made of glass, add three ounces of linen oil using a light fire, cover the vessel, move it to the side and stir it from the hole; when you see that its thread extends and becomes like gold, then remove it from the fire, purify it by beating it, and apply it on vessels, plates, [paper] leaves (*ṣuhuf*), parchments (*dafātir*), glass, and pottery, and it will give you an unparalleled gilding.

How to produce a white inscription on carnelian seals: one should take good potash salt, grind it and leave it for the night in a ceramic vessel, covered in water and dissolved; then one must boil it, clear it, beat it, and leave it in the shade to dry; when it congeals into a salt, put it away for the moment of need. Then take the salt you wish to dissolve in four times its amount of vinegar; write with it on the carnelian seals, pass it over a light fire and then the inscription will appear white, with a stratagem that does not cease [to be effective].⁴⁷

Gilding (*tahdīb*): one-quarter mithqal of well ground saffron, covered in sweet water in a well-proportioned vessel; then pour over it one-eighth dirham of sarcocolla; then place it on a light fire and make it boil gently twice or more times; then remove it from the fire, pour two grains of ground Yemeni alum on it; then return it to the fire, pour the measure of a carob bean of [gold] leaves over it, remove it quickly from the fire; when it dries; purify it and apply it on utensils made of silver, or brass, or bellows coated in brass, then it will come out like red gold after that you have burnished it.

Golden ink: when gold in leaves is not available to you, just take the ordinary gold, grind it inside a vessel on a touchstone, rub it with water inside the vessel and store it away; when you have ground a sufficient amount, leave it to sink properly, drain the water and add dissolved gum arabic to it, write with it, burnish it, and it will be the apogee [of beauty].

Lapis lazuli ink: take pure mineral lapis lazuli, knead it well with sweet water, increase the quantity of water, little by little, while you are kneading; when it becomes liquid, purify it in another vessel, and do not cease washing it while its peculiar property (*ḥāṣṣīya*) comes out from passing into in the water, purify it gently in a proportionate vessel until the heavy part that contains no dye to colour the water remains; then leave it to precipitate, that is what is mixed to water but is not solid; purify the water from it, take what has precipitated, blend it with the dissolved dye and use it.

Verdigris ink: take Iraqi verdigris, do with it as you did with the lapis lazuli, purify it, dry it, and add gum Arabic water dissolved in acid vinegar to it.

⁴⁷ Al-Zarḥūrī describes a different preparation for writing on stones, see Raggetti, *Un coniglio nel turbante*, 169.

Yellow ink: prepare the orpiment as you prepared the verdigris, and when it reaches the apogee of beauty, add gum arabic and write with it.⁴⁸

Red ink: it is the operation of cinnabar and realgar, one part, and mercury, one part, ground finely and put inside a long neck bottle well covered in clay, with its opening sealed with clay; place it in a glass over for one night; take it out, let it cool, crush it with vinegar, and work it with dissolved gum arabic.

Dissolving sandarac: take one *ratl* of it, grind it finely, place it in a new pottery vase, for each *ratl* of it add an ounce of ground salt ammoniac, close the opening of the vase with a strong skin, bury it in the manure for seven days and nights, then this will dissolve like gold, include it in your preparations like paints or other.

Golden ink from gold: melt lead and quench it in water seven times, remove carefully the water in which you have quenched the lead; take the gold, cast it, throw it in this water a few times and it will calcinate; grind it well, make it good with gum, write with it, rub it with haematite stone and burnish it with an onyx, and this will be the apogee and the utmost point [of beauty].

Dissolving mercury for writing: wash mercury with water and salt until it is purified from its black part; then pour saffron over it and grind it with it until it becomes a single thing; then grind it with gum arabic; then grind verdigris with acid vinegar, gum Arabic water, yolk, and some cow gall; use it as you would use inks (*midādāt*), and the colour will be amazing.

Silver ink: take white lead, crush it well with a bit of Yemeni alum and acid vinegar, mix it with gum Arabic, dissolve it with water, write with it, burnish it, and you will praise its result.

Golden ink: parts of verdigris and sal ammoniac, the same amount of hot lime, grind it well, dissolve it with water, beat it well, leave it to purify, and it will come out of the most beautiful light blue.⁴⁹

Golden ink: take some Egyptian alum, crush it well, mix it with saffron and gum Arabic, write with it, and it will be the apogee [of beauty].⁵⁰

Lapis lazuli coloured ink: one ounce of white lead and half ounce of Indian indigo, crushed for a long time and, when it becomes dark, the amount of white lead should be increased; when, instead, it becomes too light, increase the amount of Indian indigo.

Lac ink: one ounce of lac should be taken and worked with five ounces of water, macerate it for one night, on the morning boil it in the fire until it is reduced to half; remove it from the fire and be patient until it cools down, purify it slowly from its residue until the water is almost finished, pour two drops of gum [arabic] water and try it with the pen until when its colour pleases you at the apogee [of beauty].

Preparation of what can replace gall nuts: water of fresh myrtle, water of fresh pomegranate peelings, water of carob peelings, tamarisk water, water of fallen leaves: the peeling of every one of them can replace gall nuts. When you put them together in an ink (*ḥibr*), it will be wonderful and it will not be necessary to remove its impression from the fabric.

Red ink: take twenty dirhams of gall nuts, the same quantity of yellow myrobalan, place them together and let them macerate in two *ratl* of water and twenty-five dirhams of ground gum arabic, it should boil until one-quarter of the water has gone; then one

⁴⁸ The basic preparation for primary yellow, with the addition of gum arabic.

⁴⁹ The label "golden ink" is incongruent with this recipe, and might have resulted from a problem in the transmission of the text, not detected by the editor, if not in the edition itself.

⁵⁰ Variant of the first compound yellow described in the text, with alum instead of lead white.

should take one ounce of saffron powder, pour it over it, return it to the fire until it gets a consistence, then it should be removed [from the fire], preserved, and used.

Preparation of a mulberry water ink (*hibr*): take some *sumānī* mulberry water, pour some ground gum arabic over it, along with a bit of gall nuts water, and place it in the shade for five days; every day, pour one dirham of gum arabic over it, doing this with it for five days in half *ratl* of water; then write with it and it will be good.

An ink like gold: ten dirham of miswak, throw it in the water that serves to submerge it; then cook it in a casserole until its peculiar property comes out (*hāṣṣīya*), purify it and work with it as you did before concerning the gum and its use.

An ink like gold: take saffron in styles, pour as much water as you want in it: if you wish it to be a dye, you should add little water; if, instead, you want it clear, increase the water; place it on the fire together with ground gum arabic and fish glue, burn it with fire until the saffron dissolves and its parts [the styles] are dissolved, store it in a glass vessel. When it has dried, place it in a vessel and pour some yolk over it, grind it with a wooden stick until it goes back to its first state.

Red ink (*hibr*): take white gall nuts, prepare them and extract the blackness that is in them and throw it away; then pour pure water over it in the measure that is needed to cover it; then leave it for one hour until the water takes the faculty of the gall nuts; then purify it, take good pomegranate-coloured cinnabar, wash it from its foam after its usual grinding; then let it dry on a red roof tile until its moistness has dried; then take white lead, grind it with a bit of vinegar, place it in a new pot and it will result into gold.

Red gold ink (*hibr*): this is that you should take one part of white gall nuts, place them in water and macerate them in pure sweet water until the faculty of the gall nuts comes out, purify it gently; then take cinnabar that has been washed and makes no foam anymore; place it in a new pot and it will turn into something similar to gold.

Green ink: take thirty dirhams of green gall nuts, the same quantity of yellow myrobalan and gum [arabic]; soak them for one night in two *ratl* of water; it should boil until one quarter has evaporated; then take thirty dirham of Indian indigo and twenty dirhams of turmeric (*kurkum*), grind the two together and place them in a pot with the water extracted from the gall nuts, until one *ratl* of water is left and it has acquired a consistence, write with it and it will be nice.

Green ink: ten dirhams of crushed green gall nuts should be taken, one-third of it of yolk-coloured vitriol, place this on top of gum [arabic], crush everything together for a long time, add a bit of water to it, purify it by straining it with a cloth soaked in a water that is not that of the preparation; write with it, and it will be good.

Yellow ink: orpiment should be crushed with gallnut water, grinding it for a long time; mix gum [arabic] with it, use it and it will be good.⁵¹

Golden variety: orpiment, Yemeni alum, and gum arabic in [equal] parts ground and mixed together with realgar ground with intensity and one part of saffron; half part of gum and three parts of “milked” (?) talc; then make it thinner by grinding it until its proportion and its colour please you, and use it.

Golden ink: one part of realgar, one part of saffron (*hāṣṣ*), one part of saffron, and half part of fish glue; the glue should be dissolved by itself with water and fire, then, after a prolonged grinding, the mixture should be poured over it; then the same weight of the mixture and glue of cow gall should be poured over it, then pour on it also the gum

⁵¹ Another example of the basic preparation for primary yellow, with the addition of gum arabic.

[arabic] that is necessary, write with it after having cooked it with fire until its condition is correct, and burnish it.

Golden ink: four parts of saffron, three of realgar, let fall in drops two parts of gall nut water over it, give it a complete service, add gum arabic to it, use it, and it will be good at the highest degree.

Golden ink: equal parts of yellow sulphur and arsenic, crush them well, irrigate them with acid vinegar, place it in a glazed vessel on a soft fire, and let it cook like a dough; then leave it and let it cool in the shade; when you want to use it, mix it with gum arabic.

Golden ink: one part of potash, the same of “the servant” [i.e. mercury], the same of “scorpion” [i.e. sulphur],⁵² and half part of “eagle” [i.e. sal ammoniac]; feed “the servant” with potash, little by little, mix with it the remaining parts, crush them for a long time, sublimate them in a vessel suitable for sublimation (*taṣ ʿid*); take what rises, grind it and beat it with gum [arabic] water, and use it.

Coloured ink (the dyers use to write with it): take some crushed and sieved sandarac, one should take some acid vinegar in which some *wars* (*Memecylon tinctorium*) has already boiled and use to cover the sandarac, with an excess of four fingers; a soft fire should be lit under it after that the sandarac has been placed in a clean vessel in the middle of the vinegar, while this is boiling, and so it will dissolve. If you want to obtain the colour of silver, throw pure white lead in it; if you want to write with it in blue, throw a bit of lapis lazuli in it; if you want to write in green with it, throw some verdigris in it; if you want to write in yellow with it, throw some saffron and verdigris in it, and it will be the apogee [of beauty].

Golden ink: take one dirham of pomegranates peelings, the same quantity of colocynth, and the same amount of saffron; grind them first separately and then together, crush them with water and leave them in the hot sun until they ferment, apply it in drops on the leaf and burnish it when it dries, and it will be the apogee [of beauty].

Dissolving gold leaves: when you want to do this, take a thin and clean ceramic bowl, take one dirham of bee honey for each leaf; then rub the gold leaves with honey until there is no shine to it and everything becomes a single spirit; then wash it and this really gets rinsed by sweet pure water; then wait for one hour, protecting it from the dust, and then this will acquire the peculiar property (*ḥāṣṣīya*) of honey; purify the water from it gently and oblige it with the water of dissolved gum arabic until its consistence pleases you. If honey is unavailable, apply some residue from the butter cream bowl with sufficient gum [arabic]; kill the leaves in it, and its process is a usual one among the people of this “Art.”

Chapter six, second section: on dissolving safflower like gold⁵³

Safflower must be taken, freed from skins, cleaned, placed in a pottery vessel that allows no exhalation, then pour sweet and clear water that submerges it, leave it to macerate for one or three days; then it must be boiled on a lively fire; during the operation and while it is on the fire, throw a bit of Yemeni alum and a bit of sugar over it; when you have thrown this in it and this has boiled once or twice, remove it from the fire, stir it vigorously with the hand until its peculiar property (*ḥāṣṣīya*) come out, clarify it with a thick cloth and this pure substance is indeed sought after. So place this

⁵² See Siggel, *Decknamen*, 45.

⁵³ *Kitāb al-nuḡūm al-šariqāt*, 46–48.

water under the sky and it will congeal –or get close to congealment– and this is beautiful; so store it away and protect it from the dust. When you want to paint with it on the wooden clogs [used in the bath] or something else, the right amount of dissolved sandarac should be taken and it will become like gold, as far as purity, beauty, colour, and brilliance are concerned; so understand it.

Chapter 6, Second section, about the extraction of safflower sediment

The way of preparing it is that you take good alkali, crush it finely, macerate it in three times its quantity of sweet water; beat it with the hand until the alkali dissolves in the water; then leave it and cover it for one day, two, or three; filter it, continue the purification, boil it on a fire of burning coals; let it burn on this until a white salt congeals; if it is turbid, keep dissolving and congealing it again until it reaches the apogee of whiteness. Then take some good safflower, free from insects, clean it, macerate it in pure water for one night; then squeeze it, repeat it wide and far and increase this until you place it in a woollen cloth, tie it loosely and not tightly, deep it in water, and move it with your hand until the yellow and the red come out together and nothing remains, and squeeze it well. Then return it to the woollen cloth and the water, move it as you did the first time, but this time push it with your feet until no red, black, or yellow remains in it; then squeeze it with you hand, handful after handful, until transparent water comes out since the repetition has been effective. Spread it on the woollen cloth and place it in the shade to dry; for each dirham of it, add crushed alkali salt that you had processed for it. Mix it well in a granite stone recipient and crush it until it mixes; then apply the woollen cloth on a reed basket, place the safflower in it and rub it with you hand until it dries and becomes disjointed, and you impose clear water on it; then sprinkle a little bit of this water on it and prolong your treatment until the dye has come out from the beginning to the end, little by little. Then, for each *ratl* of safflower, take ten lemons, collect their juice free from seeds or pulp, then pour it on the dye and let it stay for one night without moving it. When the sun rises, place a grain of incense on it and draw the water from in gently, so that not a single drop remains. Take the sediment, place it in a woollen cloth, hang it, and let it drip until it is free from all water. Then take gum arabic in curls, grind it to its thinnest, add a sufficient amount of sediment, beat it well, spatter it on a Persian cane or clean peelings until it dries; remove it and store it away, its preparation has been completed.

Appendix 2. Cosmetic recipes

2a. *al-‘Irāqī, The Best of True Facts and the Explanation of Their Ways* (edition of Arabic text)

Recipe 1: Preparation of a golden pigment

صفة خضاب ذهبي يؤخذ من القصب الحديث النبطي وعروقه
ويقطع كالأصابع ثم أنصب في قرعة زجاج وركب عليه الانبيق وخذ وصله
وصعدّه يصعد مأوّه ويعيده على قصب آخر يصعد ماء احمر كالدم ثم اعجن
به الحنا واخضب به كف الجارية واترك كما تترك الحنا فانه يخرج كالذهب

5

K يؤخذ القصب الحديث *add.* [خضاب ذهبي | *om.* B L | C D K P T W صفة ¹
من ; L الغضيب الحديد النبطي ; B من القصب النبطي الحديث : C D K P T | من...النبطي
C D K ويقطع ² | *om.* W B C D K L P T وعروقه | W القصب الحديث الذهبي اللون
في | W انصبه ; L صه ; D نصّبه ; C اصبه : B K P T | انصب | B يقطع : L P T W
القرعة ; L قدح زجاج ; C عرقة زجاج : B D K T W | قرعة زجاج | P اناء *add.*
C انبيق : B K P T W | الانبيق | *om.* L B C D K P T W | وركب عليه | P الزجاجية
واستقطر : C D K P T W وصعدّه ³ | *om.* L B C D K P T W وصله | *om.* L D ;
om. C K P T : *om.* C K P T : *om.* B L | C D K P T W | اصعد | P فانه *add.* ; *om.* L ; B ;
C ² يصعد | *om.* L B C D K P T ; *om.* W | ويعيده...آخر | W ماءه ; D ماء ; B L ;
C احمر | K T | *om.* B L ; *om.* C D P W : ماء | W ويصعده ; *om.* B L ; C D K P T :
D K L P T W : *om.* B | C D K P T W : *om.* B ; *explicit ante hoc*
verbum L | B C W : *om.* D K | ابه ⁴ C P واعجن ; B D K T اعجن : W | ثم اعجن |
[واخضب به | B C K W الفتل *add.* ; *om.* D T ; B حنا : C K P W ¹ الحنا | P فيه ; T
كبد ; *om.* D P ; B حاجتك | C K T | كف الجارية | *om.* D P ; C واخضب : B K T W ;
C واترك كما يترك الحنا ; *om.* B P ; K | واترك كما تترك الحنا ²...واترك | W الحار
; C D K P | فانه يخرج كالذهب | W واترك حتى يجف ; T واترك كما تترك الفتل ; D الحنا ;
T : *om.* B ; W كالذهب يصير فانه

explicit ante hoc verbum L كالدم ³ B C D K L P T W

Recipe 2: Preparation of a pigment that confers the colour of gold

صفة خضاب يأتي لون الذهب يؤخذ عنزروت احمر ثلاث مثاقيل
ورق ذهب دانق وزرنيخ احمر ثلاث مثاقيل ومرارة الشبوط ثلاث مثاقيل
وصمغ عرابي مثقال وبزر اكليل الملك نصف مثقال وسندروس مثقلين
وتسحق الادوية وتعجن بماء الثوم الاخضر ومرارة بقرة صفراء وتخضب به
اليدين فانه يأتي كانه الذهب الابريز

5

[يأتي | B K T اخر | Lit صيغة ; om. B | خضاب | B C D K T | om. B | صفة 1
om. B | احمر | B ذهبي | الذهب | Lit W | ادن | C D | اللون ; om. B | لون | om. B Lit |
وزرنيخ دانق وزرنيخ احمر ثلاث [ورق...مثاقيل | امثاقيل...ورق 2 P 2 | ثلاث | C D Lit |
ومرارة | Lit | ورق ذهب دانق وزرنيخ اصفر ثلاث مثاقيل ; om. C D P W ; B | مثاقيل
ومرارة ; T الشبوط ; P ومرارة الشبوط ; Lit اشموط ; om. K ; D مرارة الشبوط [الشبوط
ومرارة | C ثلث 2 | ثلاث | W السمك الشبوط | om. K ; incipit post hoc verbum L ; 3 P W
[امثقال | K T ثلاث | add. عرابي | C D K L Lit T | صمغ [وصمغ 3 | om. K |
om. K Lit | D L | بزر اكليل الملك ; C كلت بزوال الملك [بزر...الملك | om. W | Lit ;
[وسندروس | W من كل واحد | add. L يعيف مثقال ; om. K Lit T | [نصف مثقال | T
om. B | مثقل [مثقلين | W سندروس ; om. K Lit T ; C D L | سندروس ; B | وسندروس
الآت [الادوية | Lit يسحقوا ; C W ; B D K L T | يسحق [وتسحق 4 | K Lit T
التوتية [الثوم الاخضر | T بماء | add. بماء | Lit ويعجنوا ; K L T | ويعجن [وتعجن | W
D K L P ; ومرارة بقر صفراء ; B ومرارة البقر الصفراء [ومرارة...صفراء | D الخضراء
ثم ; L W | ويخضب به ; K وتخضب بها ; B وتخضب [وتخضب به | T ومرارة بقر صفراء
[يأتي | C K Lit P T | فانها [فانه | L W | اليد [اليد 5 | T ويخضب بها ; Lit تخضب بها
كانها الذهب ; B P كالذهب الابريز [كانه...الابريز [الابريز...كانه | om. P | K Lit T | تأتي
W كالابريز ; Lit كالون الذهب الابريز ; L كالون الذهب ; K كانها الذهب ; C T الابريز
add. فاعلم ذلك ; add. T

BCDKLitPTW 2 ثلاث² incipit post hoc verbum L

Recipe 3: Preparation of the pods that end up like gold

صفة قموع يجي مثل الذهب يؤخذ قرظ اخضر اسحقه وادفنه في الزبل
ثلاثة أيام ثم اخرجة ويؤخذ من الحرمل جزؤ مسحوق ومن الزعفران جزؤ
ومن الحنا الفتل جزؤ ويخلط الكل ويخمر ثلاثة أيام ثم وتغسل اليد نظيفا
ويخضب به فانه يأتي كالذهب

5

كانها ذهب [مثل الذهب] *om.* B K T W | يجي *om.* W | قموع *om.* B K T | صفة¹
B | طري *add.* B K | اخضر | W قرظ ; K L T Z قرظ ; D P فرط ; B قواص [قرظ] B
T | [اخرجه] *om.* B ; 2 B K الرطب *add.* الزبل في | B يسحق ويدفن [اسحقه وادفنه] |
حرمل [الحرمل] *om.* B L Z | من | B يؤخذ [ويؤخذ] | D K P T W يخرج ; C تخرج
om. T | [ومن] 3 W ومن مرارة غراب اسود *add.* ; B [مسحوق] | L Z
B يسحق الحميع *add.* ; T [جزؤ] | K L T Z [الفتل] | C جزؤ *add.* ; T
om. C | ثم | B ثلاث [ثلاثة] | T وخمر ; K P يخمر [ويخمر] | K الجميع ; B [الكل]
D K L P W Z ; *add.* B يؤخذ الحرمل جزؤ *add.* | يغسل ; B C K L W Z ويغسل [وتغسل] |
W بالماء السخن والصابون غسلا جيد وينشف بمنشف *add.* ; B غسلا *add.* اليد | T
om. B L Z | به | C D P وتخضب ; B *om.* W 4 [ويخضب] | L Z نظيفا [نظيفا]
فاعلم *add.* ; W كالذهب ماتي ; K T كانه الذهب [كالذهب] | W *om.* L Z يكون لونه [يأتي
L Z ذلك

BCDKLPTWZ

2b. Ibn Kamāl Pāšā, The Return of the Elder to His Youth (English translation)**On the pigments for the palm of the hands and the thimble-like painting for the fingertips⁵⁴**

When a woman wears pigment for the palm of the hand or thimble-like decorations on her fingers, this is an ornamentation that attracts a man's attention and triggers his desire. In this chapter, we have mentioned different kinds of pigments that increase the beauty of a woman's appearance, when she pigments the palm of her hands and applies this on the tip of her fingers.

Preparation of a golden pigment

One *ratl* of bee honey must be taken, along with the same amount of hot water; the two should be mixed, whipped well, then kneaded in a gourd and distilled. Then, what

⁵⁴ Ibn Kamāl Pāšā, *Ruḡū' al-šayḥ*, 189–93.

precipitates from them should be taken and an ounce of Cyprus vitriol (*qalqand*) and five dirhams of iron filings should be added to it. Then, this must be put in a long-necked bottle and suspended in the hot sun until it becomes red. When you want to work with it, then dip in it the part of the body you wish to paint, after that this [the preparation] has been spattered with ammonia water and has been processed in the sun, and then it will become a beautiful gold.

Preparation of a nice golden pigment

One part of henna must be taken, along with one part of wax, one part of arsenic, one-quarter part of saffron, and like the whole [?] until it becomes a fine powder; place it in the bladder of a young billy goat or in the extremity of the intestine, it should be suspended in a jar of water, under which there should be a lamp, if it is during the summer, so that everything that drips falls on the lamp; if it is in winter, instead, it should be buried in the manure until it dissolves. When you want to apply the pigment, take what is falling in drops, knead it well with some barley flour, and leave it for a night to ripen. Then paint with it any part of the body you want, and this will come out golden as if it were liquefied gold. When you want to work with it, then dip in it the part of the body you wish to paint, after that this [the preparation] has been spattered with ammonia water and has been processed in the sun, and then it will become a beautiful gold.

Preparation of a pigment like it

Two parts of henna and tattoo ink, and the same amount as the rest of dripping dragon's blood, then the all of them is ground with wine vinegar. Then, paint the hand with it, and this will come out golden.

Another like this

Five dirhams of red arsenic must be taken, along with two dirhams of borax, the same of sulphur, the same of golden *martak* (gold oxide?); everything should be collected in a crucible, while another one should be used to cover it. Then, you should enter this in the forge and blow on it; when the "cure" turns yellow, take out the crucible and let it cool down. Then, take the "medicament" (*dawā*), grind it finely, take some good henna, knead it with the acid wine vinegar, and let it dry. Then, grind it finely, after it has dried, mix it with the "medicament" "medicament" that you have set aside; knead it well with the water in which some white sugar has been dissolved, that is to say julep, and leave it to ripen for one day and one night; then apply it on the extremity and it will come out with the colour of gold. 'Abd al-Rahmān, author of the book "The clarification of the secrets of coitus" said: "I prepared this 'medicament' for some women, and it comes out at the apogee of quality and beauty; and anybody who saw it thought that a gold leaf had been glued on their hand, so you should know this."

[Preparation of a green pigment, preparation of another pigment like this, preparation of a green pigment also said to be blue, preparation of a black pigment, preparation of the pigment with the colour of parrot feathers, preparation of a pigment with the colour of the peacock, preparation of a turquoise pigment]

Preparation of a pigment with *ḥalūq*

Two parts of dragon's blood falling in drops should be taken, along with its weight of saffron, one part of each one [?], half part of mastic, this should be ground, kneaded with gum and left to ferment; painting the hand with it, it will come out beautiful.

Preparation of a golden pigment

Three *mitqāl* of sarcocolla, along with one *dāniq* of golden flies, three *mitqāl* of arsenic, a quarter *mitqāl* of carp bile, one mithqal of gum arabic, the seeds of sweet yellow clover seeds, two *mitqāl* of sandarac, and two *mitqāl* of green garlic water; the simples should be ground and kneaded with garlic water and gall of red cow; painting with it, it will come out of a wonderful gold.

[Preparation of a silver pigment, preparation of a red pigment, preparation of a black pigment, preparation of a pigment with the colour of the sky]

Appendix 3. Al-Tamīmī, The Perfume of the Brides and the Scent of the Souls (English translation)

*Chapter on the dyes of clothes that are perfumed, rolled up, and spattered with ambergris and gold*⁵⁵

[213] Preparation of dyes with the addition of safflower from the book of perfumes ascribed to al-Mu‘tašim

Take one ounce of Abyssinian *wars*,⁵⁶ the same amount of pulverised water/aquatic saffron, one ounce of peeled mahaleb, and half ounce of *rubbāḥī* camphor, grind it and mix one with the other; then take one ounce of cold aromatics (*afwāḥ*), one ounce of Indian aloe wood, one ounce of ambergris, the same amount of Tibetan musk, and one ounce of preserved *sukk* perfume⁵⁷ scented with musk.

It should be ground, mixed together, and some ambergris should be kneaded with it; then it should be given the shape of discs and be left to dry; then it should be ground, macerated in rose water and it should be dissolved with a bit of gum arabic, and you can then dye clothes with it. If you want to make it into an ink (*midād*): water of fresh roses, water of cloves, water of *ḥalūq* perfume,⁵⁸ sandal water, water of henna flowers; it should be dried with the *takbiyya* (?), aromatic plants and red flowers should be placed under it, as we said before.⁵⁹

[214] Preparation of the dye for clothes [called] *al-marwāniyya*, from this book [above]

Take one part of nutmeg, some mace, some clover, good yellow sandal, some ripe black aloe wood, some fresh storax resin, some camphor, some musk, some preserved *sukk* perfume scented with musk.

Crush this together, pour a little of rose water over it, along with some drops of old fumigated *naḍūḥ*,⁶⁰ perfume, increasing the saffron in it and dissolving it with rose water and *ḥalūq* water, together with a little bit of gum, and roll the clothe up with it. Then dry it on your hands, and apply the musk and ambergris you wish on it. After that you have covered it, place it in a vase for the fumigation (*baraniyya qawārīr*).

⁵⁵ See al-Tamīmī, *Tib al-'arūs*, 173–77 (saffron distillate to prepare *ḥalūq*), 219–41 (*naḍūḥ*).

⁵⁶ Possibly, *Memecylon tinctorium*.

⁵⁷ Lane, a sort of perfume prepared from *rāmak* or musk. The preparation was dried in the shape of flat discs, which were pierced, strung on a hemp rope, and left to dry for one year. As it ages, its scent becomes sweeter.

⁵⁸ Lane, a thick and yellow perfume composed from saffron, a perfume usually associated with women.

⁵⁹ The reference points to a fumigation to which the dyed surface should be exposed.

⁶⁰ A kind of perfume: see Albert de Biberstein Kazimirski, *Dictionnaire arabe-français*, 2 vols. (Paris: G. P. Maisonneuve, 1960), vol. 2, 1279.

And so you should do with every clothe, dyeing it and fumigating it: place it in a vase exposed to aromatic smoke (*baraniyya mubahhira*), close its opening carefully in order to preserve the scents of its dye and its vapours, God willing.

[215] Preparation of the dye for night cloaks from the book

Take some aromatic plants, and a bit of mahaleb prune, a bit of aromatic leaves, and [the leaves] from the top of all exquisite aromatic plants together; place them in a new Syrian clay vessel; then fill it completely or in the measure you need. Then place it in a hot oven for one night. When the morning comes, take it out from the oven, purify it in a jug, and dilute it with *wars* and saffron, in a measure that is sufficient to this, and a little bit extra. Turn and twist the cloak or the *sabaniyya* fabric⁶¹ in it; turn it in this until you see that it has absorbed all the perfume. Then spread it on a clothes rack, fumigating them for all your day with the perfumes for fumigation, and then fold them. Then throw the amount you wish of musk and ambergris on them, both ground and dissolved in rose water. Resume the stirring and the turning in this, while it should dry with exquisite fumigations; place the cloth in a clay vessel or in a green jar exposed to aromatic smoke, and close its opening carefully, God willing.

[216] Preparation of another dye for clothes

One mithqal of “raised” aloe wood, one mithqal of spikenard, one mithqal of cinnamon, half ounce of mastic, one mithqal of clover, one mithqal of *harnawa* seeds, one mithqal of cubebe pepper, three dirham of Java cardamon (*qāqulla*), one mithqal of cinnamon (*salīḥa*), two mithqal of mace, two mithqal of nutmeg, three dirham of yellow sandal, three dirham of *falanḡa*, three dirham of wild ginger, three dirham of mahaleb peel, a handful of red Persian rose, two mithqal of dry red storax, a bit of camphor, ground saffron, *sukk* perfume scented with musk, *wars*, and the amount you want of safflower sediment.

Grind these things, treat the storax and the camphor in the same way: sieve it with a sift made of hair, soak in a glass basin or in a huge jug, pour over it the water that is necessary to cover it, with a surplus of for fingers, and leave it for one night. When the morning comes, remove the water from it, add some drops of *rāziqī* grapes and storax; then add saffron, *wars*, and camphor to this water, dissolve the sediment in it and beat it.

Then dip the clothe in it, turn it until it is saturated with colour; when you know that is completely saturated, place it on a clothes rack, fumigate it with three times as much perfume, aloe wood, and *nidd*.⁶² Add one ounce of musk, three mithqal of ambergris, ground, sieved, and dissolved with some sediment, rose water, *ḥalūq* water, and clover water. Return it to the perfuming until it dries. Place it in a green jug exposed to aromatic smoke, it will give an amazing perfume, God willing.

[218] Preparation of another dye from it extracted from this book

Take one *raṭl* of saffron, one *raṭl* of good sweet costus (*qust*)⁶³ soaked in *naḍūḥ* perfume peeled and dried, one ounce of red spikenard of the sparrows.

Each of them should be ground by itself; three ounces of *sukk* perfume scented with musk, ground and strained with a silk cloth, should be added to it, then mix them all together. Then take the quintessence of the oil to which *katam*⁶⁴ has been added and pound it with this.

⁶¹ A kind of thick fabric made from cotton, taking its name from Saban, a village near Baghdad.

⁶² Incense made with aloe wood, ambergris, musk, and frankincense.

⁶³ If read as *qist*, Kazimirski mentions a kind of aromatic plant used by Muslims during the ablution, which may not necessarily overlap with costus, see Kazimirski, *Dictionnaire arabe-français*, vol. 2, 736.

⁶⁴ A kind of plant that produces a black dye, see Kazimirski, *Dictionnaire arabe-français*, vol. 2, 863.

Then, take one ounce and a half of good Tibetan musk, grind it finely, sieve it, and add it to this, along with two ounces of ambergris, one mithqal and a half of styrax, mix the two and pound them well.

After this, crush it finely and place it in a long-necked bottle; and when you want to dye a clothe with it, take the quantity you need, dilute it with rose water and the sediment – or with rose water, saffron, and the sediment. Turn the cloth inside it and refine the dyeing; fumigate it on a clothes rack while it is wet, so that it dries with the fumigation, then place it in a vessel exposed to aromatic smoke.

[220] Preparation of a scented yellow dye from the book of Muhammad bin al-‘Abbās al-Ḥaškī

Take the pulverised saffron you need, knead it with the water of the scented apple, very fragrant *maysūsan*,⁶⁵ fumigate it with sweet costus and pure aloe wood until it saturates. Then take the aromatics of the dyers hot and cold, the cold should be more than the wars, peeled kernels of mahaleb prune, marjoram, mint, and Syrian apple. Grind and squeeze out its water, kneading it with it. Then it should be spread in a jug, perfuming it with sweet costus and yellow sandal many times. Then make it evaporate with seven light turns of boiling; and whenever its vapour is bigger, then it will acquire more intensity and scent. Then dissolved it in Persian rose water, clover water, and *ḥalūq* water, dip the clothe in it with a circular movement, and it should dry along with the perfuming on a wooden tripod, God willing.

[221] Preparation of another scented [dye] from his book

Take the amount of pounded saffron that is sufficient for the clothe, pour over it one ounce or more of ground Abyssinian *wars*; knead it with rose water and clover water, fumigate it with sandal and sweet costus for three days, then with pure aloe for three days until it is saturated. Then take for it some black *ja‘fariyya* aromatics, pound, sieve, and fumigate them until it [the clothe] is saturated; then cover it for the night and treat it with pure saffron in the morning. The mastic and the *sukk* perfume should be crushed, mixed with some of the sublimated waters – such as *ḥalūq* water or sandal water, and left for one night; then cleanse it in a green basin to wash clothes, along with some wheat kernels fumigated with musk. Then, it should be mixed with saffron, including in it some musk and some camphor, after that it has saturated, that is with saffron.

Dilute it with half nutmeg and fresh rose water, along with grains of *rubbāḥī* camphor’ after that it has saturated with sweet costus, sandal, and unguis odoratus; on the clothes rack with seven sticks, with aloe and camphor. Then raise it, after this, with a censer from which exquisite *nidd* incense exhales, and what comes with it; place it under a clothes rack along with flowers with a good scent, taken from marjoram, basil, and what resembles these herbs, along with distilled water of myrtle.

And when you lift the clothe from the rack, fold it and turn it in ground musk, then place it in a vessel exposed to aromatic smoke.

[222] Preparation of another unsurpassed scented [dye] for Umm Ğa‘far⁶⁶ from Ibn al-‘Abbās

Clover, Java cardamon (*qāqulla*), *harnawa* grains (?) should be taken, three mithqal of each one, along with cubebe pepper and civet (*zabād*), three mithqal of cinnamon (*salīḥa*) peel,

⁶⁵ Syrup made of iris (*sawsan*) cooked in rose water.

⁶⁶ Possibly Zubayda bint Ğa‘far ibn al-Manšūr, an Abbasid princess who later took the kunya of Umm Ğa‘far to stress her double royal lineage, as grand-daughter of al-Manšūr as well as wife and cousin to Hārūn al-Rašīd. See Renate Jacobi, “Zubayda bt. Dja‘far,” in *Encyclopaedia of Islam*, 2nd ed: http://doi.org/10.1163/1573-3912_islam_SIM_8187 (accessed 28 October 2023).

and one mithqal of yellow sandal. Collect this aromatics in a clean mortar, crush it and sieve it a sift made of tendons. Then move it to a cutting board with two mithqal of mace, four nutmegs, and half mithqal of mastic, grind it really well, and put it aside.

Then you should take two ounces of pulverised saffron, knead it with one ounce of rose water and one ounce of clover water; add the aromatics, and leave it as it is.

Then the peelings of mahaleb should be taken along with some dry aromatics, among which ought to be Persian rose. Crush it and put it in a clean small drinking vessel, pour some rose water on it, add some fresh citrus peels along with the extremities of myrtle, and cover it for one night. When the morning comes, at the moment of dyeing the clothes, it is necessary that you thoroughly knead the aromatics with this water, kneading and throwing fumigated saffron in the water; adding also a bunch of marjoram untouched by water, and water of a mint bunch on which water has not been poured. Then mix it all together, add the water of distilled fresh Syrian apple to it, some *maysūsan*, and some *naḍūh* perfume with a strong scent.

Then throw what remains of the saffron on top of this all, then leave it to ferment, and cover it for two hours; throw some thick safflower starch into it, in the measure that is necessary to make the clothe beautiful; dip the clothe in this mixture, add the liquid while rubbing until the clothe is completely imbued with the aromatics and what is with them.

Then spread it on a clothes rack and perfume it until it dries. When it starts to dry, fumigate it with pure fresh storax, mastic, and sandal, four small parts of these. Then, after that it has dried, return the clothe to the water and the aromatics; squeeze it, but not with a heavy hand; the clothe should be placed in front of you, beating it with one hand while holding it with the other, until its dye has been fully absorbed.

Then spread it indoors on a bamboo reed and a clean hemp rope, stretch the clothe on it and spread it with your hands, so that it does not get wrinkled. When it has dried a little, fumigate it with fresh storax, mastic, and sandal; but you should not fumigate it repeatedly, or the clothe will turn black. Then expose a vessel to aromatic smoke and preserve the clothe in it.

Muḥammad ibn Aḥmad said: “Rather than fumigating it with storax, mastic, and sandal, I prefer that it is fumigated with pure aloe and camphor alone. In fact, it is more delicious and fragrant in this way. When it has dried, it should be burnished, and the one who burnishes it has to add a bit of boiled ben oil, smearing the burnishing stone with it, Then, after the burnishing, suspend it on the clothes rack, mix it with many clothes, fumigating with aloe and camphor, placing underneath it the vessel containing the most exquisite perfume – made with aromatics, wheat, *naḍūh* perfume, marjoram, mint, and *lahlālīh* – for one day and one night. When the morning comes, blow on it a bit of fresh rose water, fumigate it with *nidd* incense and a raised incense burner, until it is inebriated by it. Then it may be used to dress.”

[223] Preparation of another scented yellow [dye]

Saffron should be kneaded with Persian rose water and clover water, fumigated for some days with Indian aloe and *rubbāhī* camphor, the three parts should be stirred and turned together, then blown upon until the mixture cools down, and you should not resume the perfuming when it is still hot. Then some ground *rubbāhī* camphor should be thrown over it, ground Indian aloe, and exquisite *sukk* perfume in the amount you need, but do not increase the quantity of camphor. Dissolve it for this with an amount of Persian rose water that is enough for the clothe, and turn it well into it. The one who likes to mix saffron after the fumigation with crushed aromatics, should knead it with water of fresh apple, some *rubbāhī* camphor, the same of balsam oil, crushed nutmeg, and mace. Then reinforce it with safflower starch, very thickened, and dye the clothe with it; spread it until is properly dried, so that it will not get smudged or mouldy; and distend it well, so

that it does not get creased; place it in a vessel exposed to aromatic smoke and seal its opening, God willing.

[225] Preparation of a scented yellow dye from the book of Muḥammad ibn al-‘Abbās⁶⁷

Take three mithqal of spikenard of the sparrows, one mithqal and a half of carnation flower, two mithqal of *harnawa* grain, one ounce of yellow sandal, the same quantity of aloe, two mithqal and a half of henna blossoms, one ounce of nutgrass, and one mithqal of clover cinnamon: everything should be crushed together, sieved after the crushing, and set aside.

Then nutmeg and mace should be taken, one mithqal and a half each, along with two mithqal of mastic and one ounce of peeled mahaleb kerns; these three should be ground together, sieved with a thick sieve made of hair, crushed well, pounded, and kneaded with *zanbaq*, that is mastic, nutmeg, and mace.

Then take the weights of all the aromatic substances – but not the three kneaded with *zanbaq* – pour in pounded saffron, beat it one with the other together with rose water – the rose water should be in the amount sufficient for a single clothe. Then, half mithqal of camphor should be taken, the mahaleb should be mixed with it, and the cloth should be submerged in it. Then, you should spread it over a cloths rack perfume it with a scented fumigation and some camphor. Then, three mithqal of aloe should be taken, along with half mithqal of moist ambergris-scented styrax, half mithqal of *sukk* perfume, and two grains of camphor, fumigating the clothe with this. Do not engulf it excessively in smoke, though; you should rather fan it. When it has dried, beat the mahaleb, the mastic, the camphor, the nutmeg, and the mace together with this *zanbaq*. Then dilute it with rose water, to which saffron has been added, and beat with this all the aromatic substances, crushed and sieved. Then dye the clothe in this, fumigate it until it dries, and you will feel its scents from afar.

[226] Preparation of a scented yellow dye from the book of al – ‘Abbās ibn Ḥalīd from the book of Ibn al-‘Abbās

Cubebe pepper should be taken, along with cardamon, clover, spikenard, clover cinnamon, *harnawa* grain, nutgrass, Chinese cinnamon, and henna blossoms – one mithqal of each aromatic substance for a single clothe; everything should be ground together, sieved with a thick sift made of hair. Then it should be left soaking for one night in rose water, then macerated after this, and cleansed.

Then two dirhams of nutmeg should be taken, the same quantity of mace, one dirham of mastic, and three dirham of apple water; nutmeg, mace, and mastic should be crushed well on a cutting board.

Then it should be diluted with saffron, in the amount sufficient to the clothe, and rose water in this measure; this should be used as dye after the first dye; then it should be dissolved with saffron and the aromatic substances that are in it; it should be fumigated with aloe and camphor while it is moist, until it is saturated. Then a vessel should be smoked [with aromatics] for it, and the clothe should be placed in it, God willing.

[227] Preparation of a scented dye from Barmakid ḥalūq perfume from the book of Ibn ‘Abbas

Safflower starch whose sediments have settled should be taken, in the quantity that is sufficient for the clothe, along with fresh pounded saffron, a quantity that ranges from four ounces to half *ratl*; the saffron should be kneaded well with sandal water and clover

⁶⁷ Muḥammad ibn al-‘Abbās al-Ḥuṣṣakī, author of a “Book of Perfume” (*Kitāb al-‘itr*), mentioned by other authors, such as al-Bīrūnī and al-Sutūfī. See al-Tamīmī, *Ṭīb al-‘arūs*, 25–26.

water, both sublimated, fumigated with one mithqal of sea costus and then with Indian aloe, until it is saturated.

Then some ambergris should be diluted into it, an amount between two and ten mithqal, along with some ground Tibetan musk in the same amount of the ambergris, and finally the camphor you need.

Then beat the saffron with Persian rose water, then pour in it some old and pure scented apple water; some good *maysūsan* will strengthen its scent, one ounce of each one. Everything should be beaten together, the clothe should be stirred in it and rubbed well with it; then it should be closed in this for two hours and then spread. When it has dried, burnish it well using a light hand, God willing.

[233] Preparation of the Marwanī dye with safflower, also from his book

Take the starch of safflower after that has been preserved for a while and dyes the cloths with intensity, as its saturation is defined by means of the pure starch. Then, crush in its sediment the amount of musk that is necessary, and dilute it with the amount of ambergris that is necessary; the ambergris should be mixed with Indian aloe wood crushed like it, it should be kneaded with it, and left until it cools down. It should be ground well with two dirhams of the scented powder of calamus perfumed with musk, diluting it with rose water while grinding, until it becomes this [dye]. Then pour it in the sitting sediments, and beat it well with them; the clothe should be given a good turn in it, beating it with the palms of the hands until its dye is fixed; it should be spread and fanned until it dries; then it should be fumigated with a censer and *nidd* incense, God willing.

[237] Chapter on a precious and beautiful dye with the colour of gold, from the book of Ibn ‘Abbās (when you want to dye with a golden colour, the one who see it will think that there is a mithqal of gold in it, this is a chapter precious and little known, Umm Ğa‘far transmitted it and dyed nice clothes with it, and it went marvellously)

Take as much filings of red gold as you want, place it in a crucible and add the same amount of quicksilver, blow on it on the fire until the mercury has completely flown away from it, while the gold remains. So, pour it on a cutting board and crush it until the grinding has made it thin.

Then, mix it with mastic after that you have place it in a small vessel made of stone. Then place it on hot ash, until it melts and becomes like water; then take a new clean tuft of cotton (*karsana*) and throw it in this liquid. When you want to write with this on clothes, just do it. If you wish to dye a piece of cloth, soak it in this liquid and rub the cloth with it, until you have finished to rub it on one side of the cloth. Once it has dried, burnish it well, it will take the aspect of red gold, more beautiful than what people normally see.

[238] Preparation of another dye with the colour of gold

Dissolve the red vitriol (*qalqant*) from Cyprus, take its water, soak the cloth in it; then squeeze it, after soaking this in the water of distilled honey, and burnish it: it will come out as if it had been rubbed with gold. The one who wishes to intensify its dye, he should increase the red vitriol, and then should equally boil it in the water of distilled honey.

[239] Preparation of another dye with a good scent in the colour of red gold, from the book of Ibn ‘Abbās

One should take two mithqal of spikes of the spikenard of the sparrows, two mithqal and a half of clover, three mithqals of yellow sandal, two mithqal and a half of Indian aloe wood

and of Java cardamon, the same amount of peeled great cardamon, three mithqal each of *harnawa* grain, cubebe pepper, and pepperwood, three mithqal and a half of holly/shield fern, the same amount of peeled mahaleb prunus, one mithqal of good cinnamon, and two mithqal each of gooseberry, mace, mastic, and laurel leaves.

Grind what can undergo grinding, and crush what can undergo crushing, dyeing the clothe of the colour you like, rose red or another one.

Once you have finished with the dyeing of the clothe, take the mahaleb prune, the gooseberry, the mace, and the laurel leaves, the four of them, and beat them with pure water. Then soak the cloth in it; then beat it with rose water, knead some maidenhair fern from al-Madayn, and leave it for one hour. Then spread the clothe, sprinkle these ground aromatic substances over it with a perfume sweeper, keeping them separate.

Then turn the clothe, and leave it for a day until the morning; then, it should dry a bit, an amount sufficient for the cloth of Persian rose water should be taken, one mithqal of yellow sandal should be thrown in it, crushed, increased with flowers and mint, ground, and strained with a silk cloth, and one *ratl* of fresh safflower starch, left to sit together. Then turn the clothe with it and leave it in this condition for one hour; then it should be dried and burnished or crushed.

This is the dye of the women of the Umayyads and of the mighty ones, and this is not to be found in the hands of [common] dyers.

Muhammad ibn Aḥmad said: “It is necessary that you dye the cloth with red vitriol water mixed with distilled honey water, two (*dast?*) or three times before applying the abovementioned aromatic substances on it; then, after that, you should irrigate it with the water of the aromatic substances and starch.”

Muhammad ibn Aḥmad said: “Perform the washing of golden marcasite well, until its blackness and its sulphur comes out. Then add the dissolved gold mentioned before, one part of this and one part of that; dissolve the two with water of sublimated honey, or bury the two with it in the manure for one week. Then dip the clothe you wish to dye in it with water of dissolved red vitriol (*qalqant*), then irrigate it with the marcasite and the gold, both dissolved, it will turn into a golden dye about which there is no doubt, more beautiful than any dye, If you use marcasite alone without including gold in it, but grinding it instead with water of gum arabic, and rolling in it any clothe you like; then dry it and burnish it and it will turn into a gold about which the one who sees it will have no doubt.”

[240] Writing (*takṭīb*) on clothes

Muḥammad ibn Aḥmad said: “When you want to perform the writing [in gold], prepare some [printing] blocks of teak wood, all kinds of forms, like blocks with imaginary beings and animals, fish, amusing figures, palms, and pines, and other subjects from the varieties of birds, animals, and plants; the engraving should be beautifully done, have them engraved for you by the most skillful engravers, those with the most refined hand.

Then address the forms, and whatever form you like to paint with, dye the clothe that the owner wants in red, or blue, or black, or pink, or white.

If you like the writing to be white, take gum ammoniac, crush it roughly and soak it in water for one day and one night; then dissolve it with your fingers until it become of the consistence of milk; then place it in an open and large cup and dip the block in it.”

Muḥammad ibn Aḥmad said: “You should dip the block for writing in gold (*tahḍīb al-kitāba*) in fish glue and not in ammoniac glue, because ammoniac glue [alone] burns the clothe, whereas fish glue makes gold stick as ammoniac gum does, but this is better.

Likewise, it is necessary that you do this also in the [process for] spattering, and you should fix the clothe on the frame used by the embroiders of clothes; then dip the block, stretch it from underneath with a support for the clothe, like a pillow or a cushion.

Then make an impression on the clothe with these blocks, impressing it on a single part and not in other ones; likewise, if a belt or cups are used.

When the ammoniac gum has dried, burnish golden leaves on top of it with your middle finger, with a way of burnishing similar to the one adopted by the gilders, until gold adheres to all the signs [left by] the blocks; burnish it with a heamatite, until the water goes away, God willing. There is somebody who separates it with *sukk* perfume dissolved with musk and ambergris. Likewise, if you prefer to have it separate, part with gold and part with *sukk* perfumed with ambergris, dip the block in *sukk*, musk, and ambergris dissolved with rose water. When you dip it, blow on it so that its engraving does not get blotted and smudged. Then impress it on the clothes you wish, making this trees, cups, and images clear with *sukk*, musk, and ambergris dissolved with gum water, with a *qalam* of feathers, and it will come out amazing, God willing.”

[241] Spraying [in gold]

When you want to spray a clothe in gold, or with ambergris and musk, then dye it with the dye that its owner prefers, perfumed with musk, or sandal, or saffron, or perfume. Then dissolve the *sukk* perfume that is preserved with musk and ambergris in rose water; dissolve some gum or some mucilage of quince seeds, mix it in this, and beat it well in a watering can.

Then sprinkle it regularly on the cloth – and it should be fastened on the clothes stand – without any irregularity, then dry it, and store it away. If you want to spatter it in gold, fasten it on the clothe stand, and sprinkle it with the watering can or with a brush – but the watering can is better – with dissolved fish glue. Then dry it again, glue the gold leaf on top of it by pressing it with your middle finger: underneath it there should be a support to work it, so that it is possible to glue the gold on top of it; until everything that you have written with glues takes up the gold leaves, and this will come out spattered [in gold] that is not easily removed.

To spatter people a support with *sukk*, musk, and ambergris; then you sprinkle this with fish glue, and the glue will capture gold, whereas it will not take neither *sukk* perfume nor ambergris; then the clothe will come out spattered in two colours, gold and ambergris, understand this.

You should know that everything that I have said to you in this chapter is part of the practice of writing with gold, and to spatter it with ambergris and musk is part of what I have personally seen, and it does not come from a craftsman, nor I took it from a book.

[242] Gold to write on garments without gold, on the authority of Ibn al-Zirr

Take some Armenian borax, crush it with egg yolk for three days; every time that the yolk dries, break it with the water of red Armenian borax.

Then take some good golden yellow marcasite, whose touchstone test is against the touchstone of gold, crush what you want of it. Then place it in a glass vase and pour over it the vinegar sublimated from the best old wine, the measure that is necessary to cover it and an excess of two fingers. Agitate it three times per day; every time that the vinegar turns black, pour it out and add new vinegar over it, making its state lighter and its colour clearer.

When you see that it is like this, grind it with the first medicament, with water of red prunus cerasifera from Ba'albak for three days, dry it, and roast it on a hot fire for one night; take it out in the morning, store it away, and protect it from dust and moisture.

When you want to work with it on garments, dyed or not dyed, take two parts of this marcasite and one part of emerald-green arsenic, that has already been ground with water and has become thin, and let it dry. Grind this with egg white and some 'Iraqi saffron, or with water in which fish glue has been dissolved – and this in my opinion is better than egg white.

Then draw with it anything you want, or dip in it any printing block you wish, and write with it on any garment you want. Dip your printing blocks well, then blow on their surface to reveal its incision, then impress with them on the garment, or the night cloak, or the

bedspread, on their good side. Let it dry, burnish it, and it will come out gold, about which there is nothing to say.

Sometimes, it is applied on wood and porcelain, then painted with Chinese oil,⁶⁸ and you will see a gold about which there is no doubt.

The Sage said: “When you want to treat this marcasite with vinegar, until vinegar becomes white and its blackness ceases, you will not need the water of the *prunus cerasifera*, but you will need what precedes it, then roast it, remove it from the roasting and crush it. Then, dissolve it with fresh potash (*ašnān*), and you will see something that you treat with potash like red gold. So write with it on a garment, and it will come out like gold, and you will not need neither glue nor burnisher, since it will be already burnished by itself.”

[243] Preparation of a “medicament” (*dawā*) to write on silk, on parchment, and on other fabrics, it will give an unparalleled gold

Take one part of *qalqant*, one part of *ṭalc*, and three parts of honey; put this together in a long-necked bottle, and seal its opening with clay; bury it in horse manure for nine days, changing the manure once every three days. Then, take it out on the tenth day, place it in a gourd, make it sublime on a light fire; then take the water that drips from it, add some gum arabic to it, and write with it on any fabric you want, on dyed textiles or other, it will give an unparalleled gold.

[244] Another golden one – a coating and a plating (*ṭilā* *wa-tamwḥ*) to write on anything you want

Take orpiment, *ṣarāf* that is Yemeni alum, and gum Arabic, one part of each one; grind them, sieve them, each one of them at the highest degree; refine the grinding of each ingredient by itself, then place everything together in a cup (*qadah*) sealed with clay, and cover its opening. Then place it in a pot over a fire of either [cow] manure or sheep dropping, until it melts and mixes inside the pot.

Then take it out, give it the shape of coins, let this dry in the shade in a glass drinking vessel (*ḡām*). When you want to write with it or to paint with it, grind one of these “coins” with old wine vinegar; then write with it on whatever you like, and apply it on any clothes or silver or anything else you want, and then it will be like gold about which nobody will have a single doubt.

[245] Preparation of a “cure” (*ilāḡ*) to write on silk and silk from Dabīq [in Egypt], and other clothes with silver and gold

Take pure silver. If you wish to do it silver, or red gold, if you wish to make it golden; file them separately, then throw it on a cutting board, and crush it well – along with this there should be some *darrāmī* salt, sal ammoniac, Yemeni alum, male vitriol – that is the vitriol of shoemakers – one part of each one; as for pure salt, in the same quantity of all the ingredients together.

Grind it well; when you grind it, it will become like marrow together with water, purify it from the water, then pour some fish glue over it, in the measure that is suitable for the *qalam* or the mould; then write on any fabric or anything else you want. Once it has dried, burnish it, and it will give a wonderful result.

⁶⁸ Following Ḡābir and his *Kitāb al-ḥawāṣṣ*, a mixture of colophonia, mastic, wax, marrow (*lubāb*), *naft*, seed oil, and iron filings.

[246] Preparation of a “cure” (*ilāġ*) to write a gold inscription on silk, white clothes, and other, tried out

Take one hundred dirhams of cow gall and the same quantity of seed oil; beat them strongly, throw ten dirham of egg yolk, the juice squeezed from its thin peels [of the egg?], and beat it well.

Place it in a long-necked bottle, seal its opening tightly, and bury it in fresh horse manure; this is that you should dig a hole in the ground for it and its depth should be one arm or more; bury it in this, filled with fresh manure, for forty days, changing the manure every seven days.

Once the forty days are completed, place it in a new Syrian pot, with a head made of glass like an alembic in which one distils; light a soft fire under it. What distils from it [first] is white, so pour it, since there is no good in it. When, instead, you distil from it something that resembles pure silver, store it away; purify it until nothing of it is left. Take gently what you have derived from it, then store it in a long-necked bottle, and this will remain like oil for a long time without rotting.

When you want to make an inscription or a painting that resemble gold with it, then take some styles of saffron, whole and not ground, in the amount you want; pour some water over it, and leave it to macerate in water for three days, in a closed vessel. Then purify it, and a thick yellow turbid residue will settle, which has no good in it; so take the water that raises on top of it, since this is its precious substance, and place it in the sun until it dries. Once it has dried, pour in it one dirham of ground gum Arabic of good quality on every five dirhams of it; when it becomes moist, moisten it with the “medicament” (*duwā*) that you have with you, in the same quantity of saffron. Then paint on any clothe you want or anything else; once it has dried, burnish it.

If you want to make it green, take some good verdigris for it, place it in a cup, pour the same quantity of pure water on it, and keep doing it for three days; the water that will raise is white, so pour it out. Then, take the heavy part, let it dry in the sun; pour one dirham of gum Arabic on every five dirhams of this. Then moisten it with this oil, and write with it on whatever you want; burnish it, when it dries.

If you want it red, take pomegranate-colour cinnabar, and work it as you did with the verdigris. If you want it of a lapis lazuli blue, work it like the first, this is that you prepare lapis lazuli with gum Arabic, in the way you write and the writing that is possible with it. Likewise, you should do the same with lapis lazuli, and this is a refined chapter. When you write with it on something, let it dry and burnish it.

[247] On the intensification of saffron dyes on clothes

If you want that a beautiful saffron dye comes out for you, take one dirham of fresh henna, macerate it in water for three days, then purify its water, and pour ground saffron in it. Then soak the clothe in it, and it will come out as you like it.