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MIN AL-KĪMIYĀ' AD ALCHIMIAM. THE TRANSMISSION
OF ALCHEMY FROM THE ARAB-MUSLIM WORLD
TO THE LATIN WEST IN THE MIDDLE AGES

Introduction

When the great movement of translations from Arabic into Latin took place in the twelfth and thirteenth centuries in Italy and in the Iberian Peninsula, an abundance of knowledge was transmitted from the Arab-Muslim civilisation to the Latin world. Among these new elements, several sciences were unknown to Latin scholars before that time. Alchemy is one of the best-known examples of these new sciences. It penetrated the West during the twelfth century and became an important element of Western knowledge up to the eighteenth century at least¹.

The transmission of alchemy is often divided into several stages². The first one consists of translations of Arabic alchemical texts into Latin, and the creation of a first corpus of Latin texts of Arabic origin. This movement took place in the twelfth and thirteenth centuries. In a short time, Latin scholars began to write Latin alchemical treatises, which were mainly based on the translations, creating a second corpus of texts composed in Latin, though still mainly influenced

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2. This view is, of course, a very synthetic view and a simplification of the reality.

by Arab-Muslim alchemical ideas. This moment of transition can be roughly situated in the thirteenth century. Simultaneously, a properly Latin alchemy appeared, that fully developed in the fourteenth century, which was not mainly based on the translations anymore, but was more influenced by the first Latin alchemical treatises, namely the second corpus described above.

So far, no extensive and systematic research on the translations of alchemical texts has been conducted. However, preliminary studies have been published. The historians of alchemy in the end of the nineteenth and the beginning of the twentieth century were interested in the movement of translations and provided the first grounds for further investigations on the topic. Marcellin Berthelot (1827-1907), Julius Ruska (1869-1949) and Henry Ernest Stapleton (1878-1962) are the three most famous pioneers in the field; they published numerous books and articles on various translations or possible translations, of which the complete list would take too much place here. In 1904-1905, Moritz Steinschneider (1816-1907) published a comprehensive study on Western translations from Arabic, where he identified a few alchemical texts and offered many suggestions for further research on alchemy³. In 1930, Martin Plessner (1900-1973) wrote a paper in reaction to the publication of Dorothea Waley Singer's *Catalogue of Latin and Vernacular Alchemical Manuscripts in Great Britain and Ireland*, where he provided the reader with valuable information on the Arabic influence on Latin alchemical texts⁴. In his monumental *A History of Magic and Experimental Science*, Lynn Thorndike (1882-1965) gave a significant place to alchemy, and dealt with the issue of translations⁵. In 1971, Fuat Sezgin published the fourth volume of his study of the history of Arabic literature, on alchemy, botany and agriculture, where he quotes several possible Latin translations of Arabic alchemical texts⁶. One year later, Manfred Ullmann wrote his extensive study on the natural sciences in Islam, where he mentioned some alchemical Latin translations in his long section devoted to alchemy⁷. A short excerpt of Robert Halleux's 1979 study on the alchemical texts dealt

3. Steinschneider 1904-1905, *passim*.

4. Plessner 1930.

5. Thorndike 1923-1958, *passim*.

6. Sezgin 1971, *passim*.

7. Ullmann 1972, *passim*.

with Latin translations from Arabic⁸. And in 1997, the same researcher wrote an article on the reception of Arabic alchemy in Europe, where he wrote a few pages about translations⁹. None of these studies is systematic, however, and no list of the Latin translations of Arabic alchemical treatises has been made up to now.

The first part of this paper presents a study of the meaning of alchemy in Arabic literature and in Latin texts during the early period of the reception and assimilation of alchemy. The second part is a commented list of the translations of alchemical texts known to date.

Words and Definitions

The best-known Arabic word to designate alchemy is *al-kīmiyā'*, the word from which the Latin *alchimia* originates. But when looking at medieval texts, the situation appears complex. If the word *kīmiyā'* is indeed the most common term in non-alchemical literature, it is far from being the usual term in alchemical treatises: alchemists rather use words such as *al-ḥikma* (the wisdom), *al-ṣan'a* or *al-ṣinā'a* (the art), or also *ṣan'at al-ḥikma* (the art of wisdom), *al-ṣan'a al-ilāhiyya* (the divine art), *'ilm al-tadbīr* (the science of operation), *al-'ilm al-ilāhī* (the divine science), and the like. Alchemists such as the Jābirian author of the third *Kitāb uṣṭuqus al-uss* (*Book of the Element of the Foundation*) (ninth-tenth c.) or al-Rāzī (c. 250-313 or 323/854-925 or 935) were already pointing out that difference, referring to «the science that the common people know as “alchemy” and that the elite know as the “conclusion of wisdom”»¹⁰ or presenting «our book on the art of wisdom, which is called alchemy among the common people»¹¹. Non-alchemists also noticed this difference, such as al-Khwārizmī (second half of the fourth/tenth century), a secretary (*kātib*) who wrote a handbook on sciences and their terminology, the *Mafātīḥ al-'ulūm* (*Keys of Wisdom*):

8. Halleux 1979, 64-72.

9. Halleux 1997, 146-50.

10. Jābir b. Ḥayyān, *Kitāb al-Uṣṭuqus al-uss al-thālith*, in Holmyard 1928, 99: العلم الذى تعرفه العامة بالكيميا وتعرفه الخاصة بنتيجة الحكمة

11. Rāzī, *al-Sīra al-falsafiyya* (*The philosophical way*), in Kraus 1939, 109: وكتبنا في صناعة الحكمة التي هي عند العام الكيمياء

The name of this art is alchemy. It is Arabic and derives from the (verb) *kamā yakmī*, meaning «hide», «conceal», one says *kamā al-shahāda yakmī-hā*, meaning «he concealed the evidence». The experts in this art generally call it «the wisdom» [*al-ḥikma*], and some of them «the art» [*al-ṣanʿa*]¹².

But the word *kīmiyāʾ* may also have other meanings, usually an alchemical substance (the «stone» from which the elixir is made), or even a hardly identifiable substance, as in the *Kitāb al-mamālik* (*Book of Kingdoms*), where the Andalusī geographer Abū ʿUbayd al-Bakrī (d. 487/1094) describes the pyramids as «having domes¹³ of gold, silver, *kīmiyāʾ*, sublime green stone¹⁴, and precious gems so numerous that it cannot be described»¹⁵.

In Latin, the word *alchimia* is not the most frequent in translations from Arabic, although it appears as early as in the *Liber de compositione alchimiae* (on this text, see below), where it nevertheless means the elixir, and not alchemy¹⁶. As one might expect, the first alchemical treatises, being translations from Arabic, more often designate alchemy by various other words such as *ars* (art), *magisterium* (mastery, work), *opus* (work), *artificium* (art, craft), and the like. However, as in Arabic literature, *alchimia* quite quickly becomes the usual word in non-alchemical texts¹⁷.

12. Khwārizmī, *Mafātīḥ al-ʿulūm*, in van Vloten 1968, 204: اسم هذه الصناعة الكيمياء وهو عربى واشتقاقه من كَمَى يَكْمَى إذا سَتَرَ وأخفى ويقال كَمَى الشهادة يَكْمِيها إذا كَتَمَهَا والمحققون لهذه الصناعة يسمونها الحكمة على الإطلاق وبعضهم يسمونها الصنعة. English translations of the text are available in Stapleton, Azo, & Hidāyat Ḥusain 1927, 362 and Ryding 1994, 126.

13. The meaning of the word قُبُور is not clear. It might be a rare plural of *qubba* (dome), but also the *maṣdar* of *qabana* (go into the earth), or a dialectical word *qabbūn* pointing to a kind of black beetle.

14. *Zabarjad*, a green stone close to the emerald but hard to identify with certainty, see Käs 2010, 646–49.

15. Abū ʿUbayd al-Bakrī, *Kitāb al-mamālik wa-al-masālik*, in Leeuwen & Ferré 1992, vol. 2, 537: (الحجارة من الزبرجد الرفيع) والكيمياء والفضة والذهب والأهرام قبور من الذهب والفضة والكيمياء (الجارة من الزبرجد الرفيع) وفي هذه الأهرام قبور من الذهب والفضة والكيمياء والجواهر النفيسة ما لا يحتمله الوصف كثرة. However, the word *kīmiyāʾ* is also used elsewhere in this work with the meaning of «alchemy».

16. Stavenhagen 1974, 46: «quod videlicet una pars alchimie super .m. partes argenti ponatur, et efficietur rubicundum atque purissimum», «namely that one part of alchemy (*alchimia*) is projected on one thousand parts of silver, and it will become red and very pure». The word *alchimia* only appears there inside the treatise. It also appears in the title, which is not found in the earliest manuscripts, and in the prologue, of which the authenticity is discussed, see below, p. 116.

17. See for instance Vincent de Beauvais' *Speculum doctrinale* (trifaria version, c. 1259), lib. 11, cap. 105. This use of the words *kīmiyāʾ* and *alchimia* by non-alchemists is also seen in early astrological texts, see Burnett 1992.

Knowing the meaning of alchemy in both the Arab-Muslim world and the twelfth- and thirteenth-century Latin West is surely an important clue in order to evaluate how alchemy was transmitted from one to the other. Various definitions are to be found in both Arabic and Latin literatures, defining the art in several different ways. In order to grasp these meanings better, the following paragraphs present definitions of alchemy by both non-chemists and chemists. They do not present an exhaustive list of definitions of alchemy, but focus on the ideas of various authoritative medieval scholars.

In Arabic works, the simplest definition for non-chemists portrays alchemy as the transmutation of base metals such as lead or copper into gold or silver. Ibn al-Nadīm (d. 385/995), a famous copyist and bookseller who lived in Baghdad and wrote the *Fihrist* (*The Catalogue*), a catalogue of the most famous books and authors known in his time, defined «the art of alchemy» as «the fabrication [*ṣan'a*] of gold and silver from (something) else than their ore»¹⁸. A century later, one of the famous theologians and mystic thinkers of Islam, al-Ghazālī (450-505/1058-1111) defined alchemy, the seventh branch of physics (*ṭabī'īyyāt*) according to his classification, more precisely as a science «aiming at changing the properties of the mineral substances in order to obtain gold and silver, by a kind of tricks»¹⁹. In the minds of the chemists, the main meaning of alchemy is also transmutation or dyeing of metals, as found, for instance, in the Jābirian *Kitāb al-ahjār 'alā ra'y Balīnus* (*Book of Stones According to the Opinion of Balīnus*):

As they say: «What is the definition of alchemy?» They say: «The manifestation of “it is not” [*laysa*] in “it is” [*aysa*]. Consider – may God protect you – what is better than this, since the «it is not» [*laysa*] is for them the non-being [*'adam*] and the «it is» [*aysa*] is for them – may God protect you – the existence [*wujūd*], likewise, alchemy is only giving to bodies tinctures that they do not have. Know this, God willing²⁰.

18. Ibn al-Nadīm, *Fihrist*, section on alchemy, in Sayyid 2009, vol. 2, p. 441: صناعة الكيمياء، وهي صناعة الذهب والفضة من غير معادنها

19. Ghazālī, *Tahāfut al-falāsifa*, in Dunyā 1958, 235: السابغ: علم الكيمياء، ومقصوده تبديل خواص الجواهر المعدنية، ليتوصل إلى تحصيل الذهب والفضة، بنوع من الحيل

20. Jābir b. Hayyān, *Kitāb al-ahjār*, in Kraus 1935, 140-41: ومثل قولهم: ما حدّ الكيمياء، فقالوا: إظهار ليس في أيس. فأنظر - عافاك الله - ما أحسن هذا إذ ليس عندهم عدم وأيس عندهم - عافاك الله - وجود، وكذا الكيمياء إنما هي إعطاء الأجسام أصباغاً لم تكن لها، فأعرف ذلك إن شاء الله تعالى

Alchemy was not, for some authors, restricted to metals inside the mineral world, but was also concerned with stones; the making of jewels, gems and pearls is also part of the alchemists' work according to al-Mas'ūdī, a polymath from Baghdad (d. 345/956), who alludes to the various fields of alchemy in his *Murūj al-dhahab* (*Meadows of Gold*):

For the seekers of the art of alchemy, concerning gold, silver, kinds of gems such as pearls and the like, the making of kinds of elixirs such as the elixir known as the fugitive and the like, the fixing of mercury and silver making from it and the like, among their deceptions and trickeries in cucurbit, alembic, distillation, calcination, boraxes, firewood, charcoal, and bellows [...] ²¹.

The well-known theologian of Damascus, Ibn Taymiyya (661-728/1263-1328), who condemned alchemy and considered it as fraud, also mentioned, in addition to metals and stones, perfumes (linked with the distillation process) and other substances such as rosewater. He considered alchemy as a way of falsely imitating things:

As for the alchemists who adulterate coins, jewels, perfumes and the like, they make gold, silver, ambergris, musk, jewels, saffron, rosewater or other things by which they imitate God ²².

The sons of Adam do not have the power to make created things of the minerals, the plants and the animals. However, they counterfeit in the way of fraud. This is the truth/reality of alchemy. It is counterfeiting ²³.

21. Mas'ūdī, *Murūj al-dhahab*, in Barbier de Meynard & Pavet de Courteille 1861-1877, vol. 8, 175-76: ولطلاب صنعة الكيمياء من الذهب والفضة وأنواع الجواهر من اللؤلؤ وغيره: وصنعة أنواع الأكسيرات من الأكسير المعروف بالفرار وغيره وإقامة الزبيق وصنعة فضة وغير ذلك من خدعهم وحيلهم في القرع والانبيق والتقطير والتكليس والبوارق...

22. Ibn Taymiyya, *Al-ḥisba fī al-islām*, in Laoust & Sourdel 1984, p. 11-12: ومن هؤلاء الكيماوية الذين يغشون النقود والجواهر والعطر وغير ذلك فيصنعون ذهباً أو فضة أو عنبراً أو مسكاً أو جواهر أو زعفراناً أو ماء ورد أو غير ذلك يضاؤون به خلق الله

23. Ibn Taymiyya, *Al-ḥisba fī al-islām*, in Laoust & Sourdel 1984, p. 12: وكانت المخلوقات من المعادن والنبات والدواب غير مقدورة لبني آدم أن يصنعوها لكنهم يشبهون على سبيل الغش الكيماوية باطلاً محرمة وتحريمها أشد من تحريم الربا، ولا يجوز بيع الكتب التي: «تتضمن على معرفة صناعتها وأفتى بعض ولأه الأمور بتألفها Alchemy is false and forbidden, more forbidden than usury; it is not allowed to buy books which include the knowledge of its art. Some rulers give their legal agreement to (alchemy)». See also Ibn Taymiyya, *Dar' ta'ārūḍ al-'aql wa-al-naql*, in Rashād Sālim 1991, V, 62-63; and Ibn Taymiyya, *Majmū' al-fatāwā*, in 'Abd al-Raḥmān b. Muḥammad b. Qāsim 1995, XXIX, 368-91.

The most influential philosopher of Islam, Ibn Sīnā (370-428/980-1037), the Latin Avicenna, was also opposed to alchemy. In a short work called the *Af'āl wa-infi'ālāt* (*The Acts and the Acted Upon*), he defined alchemy as a sort of magic (a classification which was already found in the *Epistles of the Brethren of Purity*)²⁴, and gave wider sense to the word, alchemy being the influence of minerals over each other:

To this sort (of influence) [speaking of magic] is attached the influence of mineral bodies over each other, the fusible ones and the non-fusible ones [*dhā'ibāt* my correction, the editor wrongly reads *dhātīyyāt* (essential), see the text in the note], the malleable ones and the non-malleable ones²⁵, of which some are called «spirits» and some «bodies», their transformation into each other, their change of colours, condition, and powers. It is famous among the masses, and it is mostly known by the people of the art called alchemy²⁶.

Another passage of Ibn Sīnā's work, the *Kitāb al-ma'ādīn wa-al-āthār al-'ulwiyya* (*Book of the Minerals and the Celestial Phenomena*), being a part of the fifth *fann* of his *Kitāb al-Shifā'* (*Book of Healing*), shows an important additional element to the philosopher's definition of alchemy. In this passage, Ibn Sīnā explains that alchemists claim to change the species of metals, and then refutes this idea and asserts that alchemists can make only sensible similarities. This text will have important implications in the Latin world (see below, p. 124):

As for what alchemists claim, one must know that they do not have in their power to really transmute species. But it is in their power to (make) sensible similarities, so that they dye the red into a white very similar to silver, that they dye it into a yellow very similar to gold, and that they also dye the white into a colour they want so that it becomes very similar to gold or copper²⁷.

24. See the beginning of *Epistle 52b*, in al-Bustānī 1957, IV, 313, where alchemy is called *qalb al-a'yān*.

25. I.e. the metals (malleable) and the stones (non-malleable).

26. Ibn Sīnā, *Af'āl wa-infi'ālāt*, in Ibn Sīnā 1935, 10 (words in bold are my corrections, the reading of the edition is between brackets): ويلحق بهذا النمط تأثير الاجسام المعدنية بعضها في بعض الذاتية (الذاتية) منها وغير الذاتية (الذاتية) والمنطوقة منها وغير المنطوقة والمسماة بعضها بالارواح وبعضها بالاجساد واحالة بعضها لبعض واستحالة بعضها الى بعض في الوانها وقوامها وقواها المشهورة عند الجمهور والمعلوم اكثرها عند اهل الصناعة المسماة بالكيميا

27. Ibn Sīnā, *Kitāb al-shifā'*, *tabī'īyyāt*, *fann* 5, in Holmyard & Mandeville 1927, 85 (= 1) and Madkūr et al. 1964, 22-23 (= ب) اما ما يدعيه اصحاب الكيمياء فيجب ان يعلم: (= ب) تعلم ب) انه ليس في ايديهم ان يقلبوا الانواع قلبا حقيقيا لكن في ايديهم تشبيهات حسية (حسنة ا) حتى يصبغوا

A very common reply to this refutation was the idea that all the metals belong to the same species, gold being the healthy state of metals, and the other metals being states of illness; but this conception of a unique species of metals was not new, and is already found in treatises as early as Balīnus's (Pseudo-Apollonius of Tyana) *Kitāb sirr al-khalīqa* (*Book of the Secret of Creation*) (beginning of the ninth century)²⁸.

The word *kīmiyā'* also has another meaning, a metaphorical meaning, in the specific context of mysticism. Mystics such as al-Ghazālī and Ibn al-'Arabī (560-638/1165-1240) entitled respectively a treatise and a book section *Kīmiyā' al-sa'āda* (*The alchemy of happiness*)²⁹. A good summary of the definition given by the mystics can be read in the *Iṣṭilāḥāt al-ṣūfiyya* (*The Sufi Terms*), a dictionary of mystical technical terms written by the Sufi 'Abd al-Razzāq al-Kashānī (d. 730/1329):

Alchemy: contentment with the existence, and abandonment of the desire of what one does not have, 'Alī, the commander of the faithful – may God be satisfied with him – said: contentment is a treasure which does not vanish. Alchemy of happiness: gilding of the soul by keeping away from base things and purifying it from these, as well as acquiring virtues and adorning it with these. Alchemy of the common people: exchange of the firm and lasting

28. Balīnus, *Kitāb sirr al-khalīqa*, in Weisser 1979, 247: «وإنما تغيّرت هذه الأجساد في مواضعها بقدر البقاع والأماكن وبقدر اختلاف الطبائع في نشوئها؛ وإنما ابتدأت الأجساد في أول نشوئها لتكون ذهباً، ولكن عرضت فيها الأعراض من بعد ما استتمّ الجرم على الذهبية. فلما عرضت فيه الأعراض قلبت لونه وريحه وطعمه لا جرمه؛ فجرم الأجساد كلها ذهب وجوهرها مثل جوهره إلا أنها اختلفت بالعوارض التي عرضت لها، فأقعدتها عن الذهبية بالألوان والطعوم والرياح لا بالجواهر. These (fusible) bodies only differ in their position (in the hierarchy of metals) according to the places and locations (of coction) and according to the difference of the natures in (the beginning of) their development [*nushū'* could also be translated as “birth” or “becoming”]; at the beginning of their development, bodies (*jasad*) begin existing only in order to be gold, but accidents occur in them once the *jirm* [literally “body”, i.e. the body of the bodies, their substantial core] is completed in aureity. And when the accidents occur in them, they change (in) colour, smell and taste, not in *jirm*. The *jirm* of all the bodies is gold, their substance is like the substance of (gold), except that they differ by the accidents which occur to them and stop them (preventing) their aureity in their colours, tastes and smells, not in their substances».

29. Chapter 167 of the *Futūḥāt makkiyya*, see Shams al-dīn 1999, III, 406. In this chapter, Ibn al-'Arabī describes alchemy as the fact of healing the sick metals as quoted above. On this chapter 167, see also G. Anawati 1959.

object of the afterlife with the breakable and mortal object of this world. Alchemy of the elite [*al-khawāṣṣ*, also meaning the properties]: liberation of the heart from the coming-to-be by the absorption of the Creator³⁰.

Among alchemists, alchemy also had a kind of religious meaning, especially in the corpus of texts attributed to Jābir b. Ḥayyān. For instance, the *Kitāb al-Bayān* contains eschatological Shī'ite elements compared to and linked with the alchemical doctrine of the book³¹. In the three books of the *Uṣṭuqus al-uss*, the Jābirian authors presented a religious doctrine, although the question remains quite complex. Indeed, alchemy is there considered as knowledge given by God by means of inspiration (*ilhām*)³², which is often considered by modern scholars as proof of the religious side of the Jābirian alchemy. However, the fact that knowledge is given by *ilhām* is quite a common feature in the so-called occult sciences and does not concretely connect alchemy with religion anymore than whichever other science³³. Nevertheless, a passage of the second *Kitāb Uṣṭuqus al-uss* presents the doctrine of a Shī'ite sect that very clearly links alchemy and religion³⁴: for these alchemists, alchemy was given to the prophets in order for them to avoid poverty, and, after giving an alchemical exegesis of Koran 2:260, the Jābirian authors consider Abraham as an alchemist. This small passage on the doctrine of a Shī'ite sect allows us to imagine that some groups of alchemists were professing an alchemical doctrine intertwined with religious considerations.

30. 'Abd al-Razzāq al-Kashānī, *Iṣṭilāḥāt al-ṣūfiyya*, in Pendlebury & Safwat 1991, ed. Ar. p. 44, transl. p. 34, my translation here (see also Shāhān 1992, 89): الكيمياء: القناعة بالوجود وترك التشوق إلى المفقود قال أمير المؤمنين علي رضي الله عنه القناعة كنز لا يفنى. كيمياء السعادة: تذهيب النفس (أنا من مخطوطة أخرى ونص شاهين وفي النص المحقق: الاخلاق) باجتذاب الرذائل وتركيتها عنها واكتساب الفضائل وتحليتها بها. كيمياء العوام: استبدال المتاع الاخروي الباقي بالخطام الدنيوي الفاني. كيمياء الخواص: تخليص القلب عن الكون باستيثار المكون. This definition is partly quoted in 'Alī b. Muḥammad al-Jurjānī (740-816/1339-1413), *Kitāb al-ta'rīfāt*, in Flügel 1845, 199, French translation in Gloton 2006.

31. Lory 2000.

32. Lory 2016, 286.

33. Even in the *Kitāb Uṣṭuqus al-uss* 2 itself, Holmyard 1928, 88 (also quoted in Lory 2016, 288): «They say similarly that all the other sciences come to us from the prophets, the imāms, the gates (*abwāb*), the proofs (*ḥujāj*), the savants (*'ulamā'*), by the notification of God». In the same view, Maslama b. Qāsim al-Qurtūbī, in both his *Rutbat al-ḥakīm* and *Ghāyat al-ḥakīm*, consider alchemy and astral magic as the last two steps of knowledge, giving them a special credit, but not a religious status, see Callataÿ & Moureau 2016.

34. Lory 2016, 287-88.

Before coming to the Latin definitions of alchemy, it is interesting to focus on the definitions of alchemy in the Western part of the Arab-Muslim world, and more precisely in al-Andalus, the Iberian Peninsula, where the translations were done during the Reconquista. The only Andalusī alchemist of which a text is known so far, Maslama b. Qāsim al-Qurṭubī (d. 353/964) (on him and his work, see below, p. 102), regarded alchemy as the penultimate grade in the scale of knowledge, the last being astral magic (though both are closely intertwined). In his system, alchemy is the knowledge of earthly spirits and its subject is a body in a body:

They are two conclusions. The Ancients called one of them *kīmiyā'* [alchemy] and they called the other one *sīmiyā'* [here, astral magic]. These are the two sciences of the Ancients, from which one can profit. Whoever has not achieved them is no sage until he masters them, and he who masters (only) one of them is (only) half a sage. Both share (the quality of) being subtle. For *kīmiyā'* is the knowledge of earthly spirits and the advantageous extraction of their subtleties. The other is called *sīmiyā'*, and is the *taṣīḥ* [literally, «the fact of giving the preponderance to something»], the (art of) talismans and of syllogisms, and this is the science of the superior spirits and of how to call down their powers advantageously³⁵.

The object (of *sihr*, magic) is a spirit in a spirit, and this is the *nīranj*³⁶ and the illusion, as the object of the talisman is a spirit in a body, and the object of alchemy is also a body in a body³⁷.

Another definition is to be found much later in Ibn Khaldūn's (732–808/1332–1406) *Muqaddima* (*The Foreword*). Ibn Khaldūn was a historian and philosopher who lived in the Maghreb (he even came to Seville for a diplomatic mission) and in Cairo. His definition is one

35. Maslama b. Qāsim al-Qurṭubī, *Rutbat al-ḥakīm*, MS Beşir Ağa 505 (= ب), fols. 4r, l. 25–4v, l. 4 and MS Ragıp Paşa 965 (= ر), fols. 52r, l. 6 ab imo–52v, l. 1, normalised orthography: وهي نتيجتان احدهما سمتها الاوائل كيمياء والثانية سمتها (سقطت من ب) سيمياء وهما علما الاوائل المنتفع بهما ومن لم يصل إليهما فليس بحكيم حتى يحكماهما فإن أحكم واحدة منهما فهو نصف حكيم وهما يشتركان في اللطافة لأن الكيمياء هي معرفة الارواح الأرضية وإخراج لطائفها للانتفاع بها والثانية تسمى سيمياء وهي الترحيح (ر: الترحيح) والطلسمة والسلموس (ر: والسلموس) (based on only three manuscripts) has been published in Madelung 2017.

36. On this concept, cf. Burnett 2008a.

37. Maslama b. Qāsim al-Qurṭubī, *Ghāyat al-ḥakīm*, in Ritter 1933, 7, (German translation in Ritter & Plessner 1962): وهذا النيرنج والتخييل: موضوعه روح في روح وهذا الطلسم روح في جسد وموضوع الكيمياء ايضاً جسد في جسد كما ان موضوع الطلسم روح في جسد

of the most comprehensive in non-chemical literature, and gives a good account of what alchemy was in the Western Arab-Muslim world of the fourteenth century, namely a century after the end of the translation period:

It is a science that considers the substance by which the generation of gold and silver is performed by art, and comments on the operation leading to it. The (alchemists) study all beings after they know their complexions and powers, (hoping that) they will discover the matter prepared for that. For this purpose, they even (investigate) the waste matter of animals, such as bones, feathers, hair, eggs, and excrements, not to mention minerals. (Alchemy), then, comments on the operations by which this substance may pass from potency to act, as, for instance, the dissolution of the bodies into their natural parts through sublimation and distillation, the solidification of fusible (substances) through calcination, the pulverisation of solid materials with the help of pestles and mullers and similar things. The (alchemists) claim that, by all these techniques, a natural body is produced which they call «the elixir», and that one projects (this elixir) on the mineral body, such as lead, tin, or copper, which is prepared by a preparation close to the act for receiving the form of gold or silver, after heating it with fire, and that (this body) turns into pure gold. They metonymically call the elixir, in their use of technical code names, the «spirit», and the body on which (the elixir) is projected the «body». The comment on this technical terminology and on the form of the technical operation by which these prepared bodies are turned into the form of gold and silver is the science of alchemy. In both ancient and modern times, people have written works on it. Discussions of (alchemy) are occasionally ascribed to people who were not (alchemists)³⁸.

38. This translation is Rosenthal's translation (in Rosenthal 1986, vol. 3, 227-28), but modified by me in order to be closer to the original, though much less elegant. Ibn Khaldūn, *Muqaddima*, in Quatremère 1858, vol. 3, 191-92: وهو علم ينظر في المادّة التي يتمّ بها كون الذهب والفضّة بالصناعة ويشرح العمل الذي يوصل الى ذلك فيتصفون المكونات كلّها بعد معرفة امزجتها وقواها لعلّهم يعثرون على المادّة المستعدّة لذلك حتى من الفضلات الحيوانيّة كالعظام والريش والشعر والبيض والعذرات فضلا عن المعادن ثم يشرح الاعمال التي يخرج بها تلك المادّة من القوة الى الفعل مثل حلّ الاجسام الى اجزائها الطبيعيّة بالتصعيد والتقطير وجمد الذائب منها بالتكليس وامها الصلب بالفهر والصلابة وامثال ذلك وفي زعمهم انه يخرج بهذه الصناعات كلّها جسم طبيعيّ يسمّونه الاكسير وانه يلقى (منه) على الجسم المعدنيّ المستعدّ لقبول صورة الذهب او الفضة بالاستعداد القريب من الفعل مثل الرصاص والقصدير والنحاس بعد ان يحمي بالنار فيعود ذهباً ابريزاً. ويكون عن ذلك الاكسير اذا الغزوا اصطلاحاتهم بالروح وعن الجسم الذي يلقى عليه بالجسد فشرح (صححت) فشرح هذه الاصطلاحات وصورة هذا العمل الصناعيّ الذي يقَلَّب هذه الاجساد المستعدّة الى صورة الذهب والفضّة هو علم الكيمياء وما زال الناس يؤلفون فيها قديماً وحديثاً وربّما يعزى فيها الكلام الى من ليس من اهلها.

In the Latin world, alchemy was also defined in many texts. The core of the doctrine remained the transmutation of metals, as mentioned by Albert the Great (d. 1280) in his *De mineralibus*³⁹ or Saint Bonaventure (1217 or 1218–1274) in his *Collationes in hexaemeron*⁴⁰, and among alchemists as in Pseudo-Albert the Great's *Semita recta*⁴¹ or Petrus Bonus's *Pretiosa margarita novella* (1330)⁴². The change of properties is also a feature of Latin alchemy, as in Pseudo-Avicenna's *De anima*⁴³. The extension from metals to stone, particularly jewels and gems, also appears in the Latin world, as in the *De aluminibus et salibus* (see below, p. 106) and in Pseudo-Llull's *Testamentum* (early fourteenth century) (see below, p. 101). Avicenna's definition as the «influence of mineral bodies over each other» was not translated into Latin, although this concept came to the West through the translation of the *Ghāyat al-ḥakīm*, the *Picatrix* (see above, p. 96). By contrast, the negation of the transmutation of species explained in Avicenna's *Shifā'* became one of the central elements about alchemy in the Latin world. Indeed, this section of Avicenna's *Kitāb al-ma'ādīn* on this matter was translated into Latin and attributed to Aristotle (on this, see below, p. 124) and this short passage, often called the *Sciant artifices*, became the starting point of a lively debate in the West over the possibility of transmutation. Hence, the idea of change of species can be read in many definitions

39. Albert the Great, *De mineralibus*, lib. III, tract. 1, cap. 1, in Borgnet 1890, 60 (English translation in Wyckoff 1967, 154): «De transmutatione autem horum corporum et mutatione unius in aliud non est physici determinare, sed artis quae vocetur alchimia.»

40. Bonaventure, *Collationes in Hexaemeron*, visio prima, collatio 2, par. 21, linea 11, in Delorme 1934, 84: «Nam, quantum ad rerum quidditatem, quidam nimis ratiocinantes mundum posuerunt aeternum, cum eius causa sit aeterna; quantum ad secundum, Mathematici per numeros et suam scientiam nisi sunt exquirere cordium secreta; quantum ad tertium, excesserunt aliqui volentes per artem opera naturae perficere, ut de uno metallo aliud, ut aurum vel argentum de stanno vel cupro, ut facere nituntur Alchimistae.»

41. Pseudo-Albert the Great, *Semita recta* (or *Libellus de alchimia*), in Borgnet & Borgnet 1908, 547: «Alchimia est ars ab Alchimo inventa, et dicitur ab archymo Graece, quod est massa Latine. Per hanc enim artem reducuntur metalla quae in mineris sunt corrupta, et imperfecta ad perfectionem.» On the authenticity of this treatise, see Calvet 2012, 129–33.

42. Petrus Bonus, *Pretiosa margarita novella*, in Manget 1702, vol. 2, 22–23: «Alchimia est scientia, qua metallorum principia, causae, proprietates et passiones omnium radicitus cognoscuntur, ut quae imperfecta, incompleta, mixta et corrupta sunt, in verum aurum transmutentur.»

43. See Moureau 2016a, 89–119.

of alchemy as in Dominicus Gundissalinus's (fl. 1161–1181) *De divisione philosophiae*⁴⁴, Vincent of Beauvais's (ante 1200–1264) *Speculum doctrinale* (actually quoting an alchemical text)⁴⁵, or Pseudo-Bede's *Sententiae philosophicae ex Aristotele*⁴⁶. The religious side of alchemy is not found in the early Latin alchemical tradition and appears scarcely in the thirteenth century⁴⁷, developing in the fourteenth century.

However, one observes a very important difference in the conceptions of alchemy between the Arab-Muslim world and the Latin West, a difference which appeared in Roger Bacon's work: medical alchemy and the prolongation of life by means of alchemy. If there were already links between medicine and alchemy in the Arab-Muslim culture, such as the several recipes to cure man with elixirs in the Jābirian *Kitāb al-khawāṣṣ al-kabīr* (*Great Book of properties*)⁴⁸, one nevertheless finds no clear system or well-developed theories of medical alchemy in the Arabic treatises before much later periods. The Franciscan Roger Bacon (1219–1292), who divided alchemy into speculative alchemy and operative alchemy, elaborated a medical theory based on alchemy, creating a system in which alchemy could cure human bodies and prolong life:

44. Dominicus Gundissalinus, *De divisione philosophiae*, in Fidora & Werner 2007, 76: «scientia de alquimia, quae est scientia de conversione rerum in alias species.» This work of Gundissalinus is inspired by the *De ortu scientiarum*, a translation from an Arabic treatise (ed. in Baeumker 1916).

45. Vincent of Beauvais, *Speculum doctrinale*, 11, 105b, quoting the *doctrina alchimiae* (unidentified alchemical treatise, identical to the *alchimista*, see Moureau 2012, 45): «Alchimia proprie est ars transmutandi corpora mineralia a propriis speciebus ad alias; ut sunt metalla et huiusmodi. Hec descendit ab illa parte naturalis philosophiae que est de mineris, sicut agricultura ab illa parte que est de vegetabilibus. Hanc etenim acceperunt artifices a naturalibus, quamvis ea que fiunt non sint tam certa aut propria sicut naturalia.»

46. Pseudo-Bede, *Sententiae, sive axiomata philosophica ex Aristotele et aliis praestantibus collecta, una cum brevibus quibusdam explicationibus ac limitationibus*, in Migne 1850, *Opera didascalica sive omnium ejus operum pars prima. Sectio secunda. Dubia et spuria*, p. 967a: «Alchimistae dicunt quod ex ferro vel cupro potest fieri aurum per eorum artem. Ubi dicitur quod ex ferro vel cupro fit aurum vel argentum apparenter, non autem existenter. Et ratio est, quia per nullam artem forma substantialis potest poni in esse specifico alterius formae.»

47. As, for instance, the quotations of the Bible in the *Liber Compostelle* of the Franciscan Bonaventura da Iseo. I thank Antoine Calvet for pointing out this reference to me.

48. Chapters 6–11, see extracts in Kraus 1935, 303–6, and Istanbul, Süleymaniye Kütüphanesi, Fātiḥ 5309, fols. 11–18v. On the links between medicine and alchemy in Arabic alchemy, see Moureau forthcoming.

But there is another science, which deals with the generation of things from the elements, and with all the inanimate things, for instance elements, simple and compound humours, common stones, gems, marbles, gold and the other metals, sulphurs, salts, atraments (i.e. vitriols), azure, minium, and the other colours, oils, burning bitumen, as well as endless other (materials) on which we find nothing in Aristotle's books; and neither the natural philosophers, nor the entire Latin people know about these. [...] And this science is speculative alchemy, which investigates [*speculatur*] all the inanimate things and the entire generation of things from the elements. On the other hand, it is the operative and practical alchemy which teaches how to make noble metals, colours, and many other things, better and more abundantly by art [*artificium*] than if they were made by nature. A science of this kind is greater than all the previous ones, because it has more useful outcomes. Indeed, it can not only provide for the expenses and other countless (needs) of the state, but it teaches how to find how to prolong human life for a long time, to which it can be brought by nature⁴⁹.

49. Roger Bacon, *Opus tertium*, in Brewer 1859, 39-40: «Sed alia est scientia, quae est de rerum generatione ex elementis, et de omnibus rebus inanimatis: ut de elementis, et de humoribus simplicibus et compositis; de lapidibus communibus, gemmis, marmoribus; de auro et caeteris metallis; de sulphuribus, et salibus, et atramentis; de azurio, et minio, et caeteris coloribus; de oleis et bituminibus ardentibus, et aliis infinitis, de quibus nihil habemus in libris Aristoteleis; nec naturales philosophantes sciunt de his, nec totum vulgus Latinorum. Et quia haec scientia ignoratur a vulgo studentium, necesse est ut ignorent omnia, quae sequuntur, de rebus naturalibus; scilicet de generatione animatorum, ut vegetabilium, et animalium, et hominum: quia ignoratis prioribus, necesse est ignorari quae posteriora sunt. Generatio enim hominum, et brutorum, et vegetabilium est ex elementis et humoribus, et communicat cum generatione rerum inanimatarum. Unde, propter ignorantiam istius scientiae, non potest sciri naturalis philosophia vulgata, nec speculativa medicina, nec per consequens practica; non solum quia naturalis philosophia et speculativa medicina necessariae sunt ad practicam ejus, sed quia omnes simplices medicinae de rebus inanimatis accipiuntur de hac scientia, quam tetigi, sicut manifestum est in secundo libro Avicennae Medicinalis, qui simplices medicinas enumerat; et ex aliis auctoribus manifestum est: quarum medicinarum nec nomina sciri possunt, nec significat, nisi per hanc scientiam; et haec scientia est alkimia speculativa, quae speculatur de omnibus inanimatis et tota generatione rerum ab elementis. Est autem alkimia operativa et practica, quae docet facere metalla nobilia, et colores, et alia multa melius et copiosius per artificium, quam per naturam fiant. Et hujusmodi scientia est major omnibus praecedentibus, quia majores utilitates producit. Nam non solum expensas et alia infinita reipublicae potest dare, sed docet invenire talia, quae vitam humanam possunt prolongare in multa tempora, ad quae per naturam produci potest.»

Medical alchemy developed quickly and became one of the very popular fields of alchemy, as it can be observed in the prominence of texts such as Johannes de Rupescissa's *De consideratione quintae essentiae* (1351–1352)⁵⁰.

All the cited characteristics of early Latin alchemy are summarised in one of the most famous and clear definitions of alchemy, found in Pseudo-Llull's *Testamentum*. This passage leaves the modern reader perceive the meaning of alchemy for a Latin scholar at the end of the period of translation and assimilation of Arabic materials:

Alchemy is a celestial [var. concealed] part of natural hidden philosophy, more necessary, which sets up and unifies art and science, which is not known to everyone. It teaches us how to clean and purify all precious stones, not the perfect ones, but the deficient ones, and how to lead them to the right temperament. (It also teaches) how to restore the fallen and weak bodies and lead them to the right temperament and the excellent health. (It) also (teaches) how to transmute all the metallic bodies into true moon, then into true sun, by one universal medicinal body into which all the particular medicines are and have been reduced⁵¹.

The transmission of alchemy

Context of departure: al-Andalus and North Africa

Alchemy in al-Andalus is currently almost a *terra incognita*. No study has been published on the subject. From the beginning of the eighth century, the Iberian Peninsula was under Arab-Muslim

50. Johannis de Rupescissa, *De consideratione quintae essentiae*, in Gratarolo 1561a, 117: «medicinas valde mirabiles ac summe desideratas a mundo, quae non solum quasi miraculose corpora nostra sanarent ab omnibus morbis, sed etiam ipsa metalla imperfecta in aurum et argentum in ictu oculi transmutarent [...]»

51. Pseudo-Llull, *Testamentum*, in Pereira & Spaggiari 1999, 306: «Alchymia est una pars naturalis philosophiae occultae coelica [var. celata], magis necessaria, quae constituit et facit unam artem et scientiam, quae non omnibus est nota, et docet mundare et purificare omnes lapides pretiosos, non perfectos, sed diminutos, et ponere ad verum temperamentum; et omnia humana corpora lapsa et infirma restituere et ad verum temperamentum reducere et optimam sanitatem; et etiam transmutare omnia metallica corpora in veram lunam, postea in verum solem, per unum corpus medicinale universale, ad quod omnes medicinae particulares reductae sunt, et fuerunt.»

dominion. Alchemy never openly flourished in al-Andalus, and was never truly accepted by the rigorous religious *mālikī* trend. In the current state of research, for the period between the eighth century and the thirteenth century, namely during the Umayyad time, the *taifas* period, and the Almoravids and the Almohads ages, only one preserved alchemical treatise written in Arabic is known: the *Rutbat al-ḥakīm* (*The Rank of the Sage*) of Maslama b. Qāsim al-Qurṭubī written between 339–342/950–953, during ‘Adb al-Raḥmān III’s caliphate, maybe in Cordoba or in Madīnat al-Zahra⁵². Maslama b. Qāsim was a *muḥaddith* (expert in *ḥadīth*), but also an alchemist and a magician who also wrote the *Ghāyat al-ḥakīm* (*The Aim of the Sage*), better known under the title of its Latin translation *Picatrix*⁵³. He was renowned in the court of ‘Abd al-Raḥmān III, being one of the tutors of his son ‘Abd Allāh (who was later beheaded for rebellion), but he seemed to have been an exception, keeping in mind that the caliphate of ‘Abd al-Raḥmān III was itself an exception of openness in al-Andalus. There are actually more clues to the presence of alchemy in al-Andalus in Latin texts than in Arabic literature. Further research will perhaps bring new elements to bear on this issue. Strangely enough, in the eleventh, twelfth and thirteenth centuries in al-Andalus, alchemy seems at first glance to have been quite a discreet science, although popular enough to have been part of the translation movement⁵⁴.

As for alchemy in North Africa, almost nothing has been studied up to now. We know that alchemy was developed in Egypt thanks to authors such as Ibn Umayl (tenth century), but we do not know much about alchemy in the paths from North Africa to the Latin West (especially Sicily).

52. On this treatise and its author, see Fierro 1996, Carusi 2000, Callataÿ 2013, Kacimi 2013, Callataÿ & Moureau 2015, Callataÿ & Moureau 2016, Callataÿ & Moureau 2017. The text is edited in Madelung 2017, but on the base of only three manuscripts (excluding the oldest ones).

53. Edited in Ritter 1933, translated Ritter & Plessner 1962. See also Boudet, Caiozzo, & Weill-Parot 2011. On this text, see also the article of Jean-Patrice Boudet in the present volume, 143–65.

54. Forcada 2017.

Context of Arrival: The Latin West Before the Translations

Before the translations of Arabic texts into Latin, alchemy was almost completely unknown in the West. However, no thorough study has been made of this topic so far and some recipe collections may hold hidden gems⁵⁵. The only clues that have been observed up to now are some technical recipes in various compendia of craft recipes, such as the *Compositiones variae* (c. 800), which bears some similarities with the Leiden Papyrus⁵⁶, the *Mappae Clavicula* (ninth century or earlier), which contains some recipes similar to those of the Leiden Papyrus⁵⁷, and the mention by the chronicler Adam of Bremen of the presence of a Greek alchemist at the court of the German princes⁵⁸. The *Mappae Clavicula* is a collection of recipes that might have a Greek origin, and which contains a few recipes of Arabic origin, maybe translated by Adelard of Bath⁵⁹. Other treatises contain technical descriptions as, for instance, cupellation accounts in the *Dialogus de Scaccario* (c. 1180)⁶⁰, a treatise about the Exchequer (the English office for taxation) written in Latin in England, but they never pertain to the core of alchemy, i.e. transmutation.

There is, however, one exemplary exception. Around 1125, a monk Theophilus, perhaps identifiable as Roger of Helmarshausen, wrote the *Diversarum artium schedula*, a technical treatise composed in a very detailed way by a practitioner, contrary to many of the recipes found in medieval manuscripts⁶¹. This treatise contains a recipe that is, strictly speaking, alchemical, where the author explains how to make «Spanish gold», which consists of transmuting red copper into gold

55. A few paths of research are proposed in Halleux 1997, 143–46.

56. R. P. Johnson 1939.

57. Caprotti 2013.

58. Brunet-Jailly 1998, 15. I thank Antoine Calvet for pointing out this reference to me.

59. Edited and translated in Smith & Hawthorne 1974. On the Greek origin hypothesis, see Halleux & Meyvaert 1987. The recipes containing Arabic words are recipes 195–203. On the addition attributed to Adelard of Bath, see Clagett 1970, 62.

60. C. Johnson 1983, *passim*.

61. Edited and translated in English in Dodwell 1986. Other editions in Ilg 1874 and (with a French translation) L'Escalopier 1843. Translated in English in Hawthorne & Smith 1979.

using powder of basilisk, human blood and vinegar⁶². To this text, one might add the *Practica* that is discussed below (p. 117) keeping in mind the hypothetical nature of its dating.

The Translations

The following pages present a list of texts that are, might be, or pretend to be Latin translations from Arabic⁶³. These texts can be divided into two groups: the properly alchemical texts (1 to 36), and the texts that are related to alchemy but are not genuine alchemical texts (37 to 41). This list is more a *status quaestionis* with several additions and new discoveries than an exhaustive list, since the current state of research does not allow one to make a definitive list. Further research will certainly bring new translations to light. The list is arranged in alphabetical order by author or pretended author, or by title when the text is anonymous.

To this material must be added a large series of *Synonyma*, lists of alchemical terms followed by their definitions, which often contain Latin transcriptions from Arabic; *Synonyma* are not translations but tools developed in order to help Latin readers, and which facilitated the assimilation of Arabic alchemy in the West⁶⁴. These *Synonyma* have not been treated in this paper. Identified fakes have also been left aside, such as the treatise entitled *Liber Alpharabius* in manuscript Paris, BnF, lat. 7156, ff. 42v–48v (by another hand in the margin), which is actually the *Quaestiones Nicolai Peripatetici* (edited in Wielgus 1973).

One of the most problematic issues raised when studying alchemical translations is to identify whether texts that purport to be translations are real translations. Indeed, pseudepigraphy is very common in the field of alchemy, and some texts that were written in Latin were ascribed to famous Arabic alchemists, such as the *Summa Perfectionis* attributed to Geber, the Latinised name of Jābir b. Ḥayyān. Some cases remain very dubious and might be fake translations, such as the

62. Theophilus, *Diversarum artium schedula*, lib. 3, cap. 48. *De auro hispanico*, Dodwell 1986, 96–98. On this passage, see Opsomer & Halleux 1994.

63. Only the texts that are not proven to be Latin compositions are numbered, i.e. translations and texts that might be translations.

64. On the synonymies, see Mandosio 2001.

De perfecto magisterio attributed to Aristotle (number 5); critical editions and further research will bring new light to these texts.

List of the Latin translations
and possible Latin translations of Arabic alchemical texts

1. *Ordinatio Alchid Bechil*. In manuscript Paris, BnF, lat. 7156, ff. 143r-v, there exists a very short text which is claimed to be a translation from an Arabic text by a certain Alchid Bechil: *Incipit ordinatio Alchid Bechil Sarraceni philosophi* (inc.: *recipe lathrtg: b hoc est tartuga* [...] THK 1327). No study of this text has been done so far. It contains obscure code names (for instance, f. 143rb: *latbrcg: b hoc est tartuga*), and two words that are or seem to be transcriptions⁶⁵: *sabon* (*sābūn*) (f. 143rb), *alfoc* (?). It also contains a few sections of sentences in a language that seems to be Catalan⁶⁶, an allusion to the *vitrum Alexandrinum* (f. 143va), and the word *morabetinus*, which designates the coin *maravedis* (from the Arabic *murābiṭ*⁶⁷) (f. 143va). In the present state, it is not possible to confirm whether the text is or not a translation from Arabic.

2. Alphidius's *Liber ad filium suum*. To the enigmatic figure called Alphidius are attributed two treatises. The *Liber ad filium suum* is by far the more famous (inc.: *scito fili quod hunc librum tibi scripsi... / ut enucliatius intelligas me loquentem volo* [...] THK 1407 and 1618, see also 730, 899, 1410). While preparing this paper, I was able to identify the text's Arabic original: the *Risālat Asfīdiyūs* that is found in manuscript Paris, BnF, ar. 2611, ff. 67r-74r⁶⁸. The Latin name Alphidius had already been related to the Arabic name Asfīdiyūs by Steinschneider, but the original was not known (Steinschneider 1897, 361). Up to 1972, Asfīdiyūs was considered an Arabic transcription of Asklepios (Berthelot, Houdas, & Duval 1893, 3:16, Steinschneider 1897, 361, Sezgin 1971,

65. I do not mention here the very common transcriptions such as *alutel* (*al-uthāl*).

66. I thank Antoine Calvet for his help about this question.

67. On this word, see Moureau 2016a, 302.

68. I have used the Latin version as found in manuscripts Jena, Thüringer Universitäts- und Landesbibliothek, MS El. q. 19, ff. 169r-172r, Cambridge, Trinity College O.8.25 (James 1400), ff. 141v-147v, and Cambridge, Trinity College O.2.18, ff. 121r-124r.

58), but Manfred Ullmann put forward a more convincing hypothesis, although the question remains open: Asfīdiyūs is likely a transcription of the name of the philosopher Secundus the Silent (Ullmann 1972, 164). The Arabic text begins with an introduction that is not found in the Latin version; there is also a version of the *Liber ad filium suum* with a small prologue, which is different from the Arabic text. I am currently preparing an article to explain this identification in detail. The other text, the *Liber Metheaurorum* of Alphidius (inc.: *Primum huius libri o theophile constat eulogium aperire nescientibus*), is actually not another treatise⁶⁹. This text begins with a short introduction that I have not been able to identify elsewhere (f. 133rb, l. 1–f. 133va, l. 33), but that is inspired by the *Liber ad filium suum*: the same list of materials appears on f. 133va, ll. 20–23 (as in the *Liber ad filium suum* in MS Cambridge, Trinity College O.8.25, f. 142r, ll. 10–12). As for the rest of the text, it is in fact the *Liber ad filium suum* with the small prologue mentioned above (starting from f. 133va, l. 33, *volo ut scias de qua materia*).

3–4. *De aluminibus et salibus*. The *De aluminibus et salibus*, also called *De spiritibus et corporibus* (inc.: *scias quod atramenti genera sunt multa [...]* THK 1388), is one of the three translations of alchemical treatises that are attributed to Gerard of Cremona (1114–1187) in the list of his *socii*⁷⁰; the text is most often anonymous, but is sometimes attributed to Hermes, or more rarely to Rāzī. These titles refer actually to two different translations of one anonymous Arabic treatise probably written in the eleventh or the twelfth century in al-Andalus. For a status quaestionis, see Colinet 2000a, XLII–XLV, and Ferrario 2004. The Arabic text is partially preserved in a single manuscript (Berlin, Staatsbibliothek, Sprenger 1908)⁷¹, and was edited in Ruska 1935a.

3. The first Latin version, often called the P version (because of MS Palermo, Biblioteca Communale, 4 Qq A10), was edited in Steele 1929. This version has been recently shown by Charles Burnett to be, in all likelihood, Gerard of Cremona's translation⁷².

69. For this article, I have used the version present in manuscript Paris, BnF, lat. 6514, ff. 133r–135r.

70. Burnett 2001, 280.

71. On this manuscript, see Ferrario 2009.

72. Charles Burnett, oral presentation entitled «The Latinity of the *Liber Vacce*» and given in Paris on 14 October 2016. This presentation will become an article in the future.

4. The second translation, called the G version because it was edited among John of Garland's works in 1560⁷³, was edited by Ruska along with the Arabic fragments in Ruska 1935a. There is also a third version, which seems to be a reworking of version P, which can be found in the *Liber claritatis*, edited in Darmstaedter 1925–1928. Gabriele Ferrario is currently preparing a new critical edition of the Arabic fragments and of the Hebrew translation of the text. Charles Burnett and Catherine Arbuthnott are currently preparing the critical edition of the Latin versions.

5. Pseudo-Aristotle's *De perfecto magisterio*. The *De perfecto magisterio* (inc.: *cum studii solertis indagine universarum* [...] THK 344) is an alchemical treatise sometimes attributed to Rāzī, but most often to Aristotle (an attribution which gave it significant authority). No Arabic original is known, and the question of whether the text is a translation is complex. Indeed the text presents some features of a translation and, in manuscript Paris, BnF, lat. 6514, f. 125r, it is called *liber minoris translationis*, but Ruska studied the text and put forward the hypothesis, with quite convincing arguments, that it was not a translation but a text written in Latin in the thirteenth century (Ruska 1939, 45–56). Nevertheless, the question is not solved and a critical edition and thorough study of the text are needed to know more about it. The text is also called *Lumen luminum* in manuscript Paris, BnF, lat. 6514, f. 120r. For a detailed *status quaestionis*, see Colinet 1992, 1:101–15. The text is edited in Gratarolo 1561b, 2:188–225, Gratarolo 1572, 2:101–208, *Theatrum Chemicum* 1602–1661, vol. 3 (1659), 76–127, and Manget 1702, 2:638–59.

6–7. There are two Latin texts that are translations from Arabic that both mention the philosopher Aros and should not be confused.

6. *Responsiones Aros philosophi ad Nephes regem*. The *Responsiones Aros philosophi ad Nephes regem de philosophia malis et improbis occulta et sapientibus manifesta* has recently been identified by Sylvain Matton as the Latin translation of the Arabic *Ajwibat Āras al-ḥakīm ilā su'ālāt Qayṣar malik al-Rūm* (*The Answers of Aros the Wise to the Questions of Caesar, King of the Romans [i.e. Byzantines]*). The text is written in the form of a dialogue between Āras and the emperor. The translation is not dated but must have been done before 1325 (Matton 2017, X).

73. *Compendium alchimiae* 1560.

The text was edited and studied along with a reproduction of the Arabic text of manuscript Dublin, Chester Beatty, Ar. 4121, in Matton 2017. See also Kahn 2018.

7. *Practica Mariae prophetissae sororis Moysi*. The *Practica Mariae prophetissae sororis Moysi* (inc.: *convenit Aros cum Maria prophetissa sorore Moysi* [...]) THK 264) is the Latin translation of the Arabic *Risālat Māriya bint Sāba al-malik al-qibṭī ilā Āras* (Epistle of Mary, Daughter of the King Sāba the Copt, to Aros) and relates a dialogue between Mary the Copt and Aros about the whitening of the stone. The text has not been studied, see Sezgin 1971, 105–6 and Ullmann 1972, 183. The Arabic text has not been edited, and the Latin text was edited in *Artis auriferae* 1572, 343–48, *Artis auriferae* 1593, 319–24, and *Theatrum Chemicum* 1602–1661, vol. 6 (1622), 497–80.

8. Artefius's *Clavis maioris sapientiae*. The *Clavis maioris sapientiae* of Artefius (inc.: *laudemus in principio deum qui est inspector omnium* [...]) THK 812) is the Latin translation of the *Miftāḥ al-ḥikma* (Key of Wisdom), an Arabic treatise written around the tenth century (Kraus 1942, 298–300) and attributed to a certain Ibn Bal'awān, who claims to have been a disciple of Balīnūs. The translation was identified in Levi della Vida 1938. For a recent status quaestionis, see Moureau 2013; see also Carusi 2002. The Arabic text has not been edited, but Paola Carusi is currently preparing a critical edition of it. The Latin text was edited in *Artefii Clavis Maioris Sapientiae* 1609⁷⁴, *Theatrum Chemicum* 1602–1661, vol. 4 (1659), 198–213, and under the name of Alfonso, King of Castile, in *Theatrum Chemicum* 1602–1661, vol. 5 (1622), 855–79. As for the treatise entitled *De arte occulta atque lapide philosophorum liber secretus* ascribed to Artefius (ed. in Arnould 1612, 7–43), it is in all likelihood a later forgery (Halleux 1983, 251).

9–10. Among the various alchemical Latin treatises attributed to Avicenna, only two are translations⁷⁵.

9. Pseudo-Avicennian *De anima*. The alchemical *De anima*, better known under its later title *De anima in arte alchemiae*⁷⁶, is the transla-

74. I thank Didier Kahn for pointing out this reference to me. For more information on a French translation, see Kahn 1995, n. 218.

75. For a recent status quaestionis about the Latin alchemical texts attributed to Avicenna, see Moureau 2016a, 9–31.

76. This title comes from the edition of Mino Celsi published by Pietro Perna in Basel in 1572.

tion and compilation of three Arabic treatises lost to this day. The text was attributed to Avicenna, but the philosopher cannot be its author. The translation might have been done in 1226 or 1235 as noted in a colophon, but it is impossible to assert with certainty whether the text is the compilation of three translations or the translation of an already prepared compilation⁷⁷. The *De anima* is a long text of Jābirian influence, that was very influential during the thirteenth and fourteenth centuries. The treatise has been edited, translated into French and studied in Moureau 2016a and Moureau 2016b.

10. Pseudo-Avicenna's *Epistola ad Hasen regem de re tecta*. The *Epistola ad Hasen regem de re tecta* (inc.: *pertractata sunt inter me et Hasen eo* [...] THK 1036) is the translation of the *Risālat al-iksīr*, an Arabic alchemical epistle attributed to Avicenna. The text is most probably not authentic. For a recent status quaestionis, see Moureau 2016a, 19–23. The Arabic text was edited in Ateş 1953, and translated into English in Stapleton *et al.* 1962, 45–76, and into French in G. C. Anawati 1971, 302–39. The Latin text is available in *Theatrum Chemicum* 1602–1661, vol. 4 (1659), 863–75, and I plan to do a critical edition of the Latin version.

11. Hermes's *Septem Tractatus*. In the current state of research, the only Latin text consistently attributed to Hermes, the «first alchemist»⁷⁸, and considered a translation from Arabic, is the *Tractatus aureus*, also called the *Septem tractatus* (inc.: *cum in tanta etatis prolixitate* [...] THK 308 and 675)⁷⁹. A Greek origin is also sometimes proposed, but the hypothesis is highly unlikely. For the *status quaestionis* with a short study of the content, see Pereira 2003. It was edited in *Ars chemica* 1566, 7–31, and then with a commentary by Israel Harvet in 1610 (see Gilly 1977, 74–75), reprinted in *Theatrum Chemicum* 1602–1661, vol. 4, 1659, 592–705, and Manget 1702, vol. 1, 401–45. In the 1566 edition, as well as in certain manuscripts, the text is preceded by a prologue which contains notable similarities with the prologue

77. Jean-Marc Mandosio proposes to support the hypothesis of the compilation of translations and gives very interesting arguments for this, but there remain slight doubts, in my opinion, since several arguments contra are still present in this proposal, see Mandosio 2017.

78. On the place of Hermes in alchemical literature, see Matton 2003.

79. I do not mention here the *Liber Hermetis* (inc.: *Alchimia est ars ministralis* [...] TK 76), since there is a very low plausibility that this text is a translation from Arabic. On this text, see Newman 1991, 7–15.

attributed to Robert of Chester for the *Liber de compositione alchemiae* (see Ruska 1929, Burnett 1976, and Pereira 2003, 655–58); this prologue presents the text as a translation from Arabic⁸⁰. No Arabic original has yet been found, and there is no certainty that the text is a translation, but it does contain a few transcriptions from Arabic that support that hypothesis: *de seyre citrino* (*sha‘ar?* hair) (p. 10 in the edition of 1566), *sireth* (*zarnīkh?* arsenic) (16), *colcothar* (*qalqatār*, usually red vitriol) (16), *Chermes* (*qirmiz*, kermes) (22), *alpha yda* (*al-fā’ida?* the benefit, or *al-fā’ida?* the surplus, Michela Pereira, in her article, reads from another manuscript *alpha secunda* (= *Ilda*) (23), *Both* (*būt?* crucible) (24), *Cambar* (*qinbār*, cinnabar) (25), *Ixsir* (*iksīr*, elixir) (29–31). A critical edition and a study of the treatise is needed in order to know more about this treatise. In addition to this, a thorough study of the mass of alchemical texts attributed to Hermes could bring new translations to light.

12. *Liber dabessi*. *Liber Hermetis de blchkmkb* (or *alchimia*), *Secretum secretorum Hermetis*, *Liber dabessi*, and *Liber rebis* are various titles of a short treatise on the philosophers’ stone. Various versions of the text circulated. It has been studied in depth in Colinet 1995, where several versions are edited. Another version is edited in Steele & Singer 1928. The attribution to Hermes of the *Liber de alchimia* is due to the fact that it contains a version of the Emerald Tablet (on its version of the tablet, see Mandosio 2003). In their article, Steele and Singer suggested identifying the translator as Plato of Tivoli when he was in Barcelona in 1134–1145, but this hypothesis is based only on stylistic observations. Halleux read an explicit differently and proposed identifying the translator as Raymond of Marseilles (fl. 1141) (Halleux 1997, 148). On the text, see also Matton 2003, 628–29.

13–14. Two Latin texts are attributed to Senior Zadith filius Hamuel, the Latin name of Muḥammad Ibn Umayl al-Tamīmī (c. 900–960).

13. Senior Zadith’s *Epistola Solis ad lunam crescentem*. The *Epistola Solis ad lunam crescentem* (various incipits, see THK 308 and 1169) is the partial translation of Ibn Umayl’s poem entitled *Risālat al-shams ilā al-hilāl* (*Epistle of the Sun to the Crescent Moon*), an alchemical poem

80. *Ars chemica* 1566, 9: «Et quamuis in nobis latinitas praemodica, tenuesque sit ingenium, septem tractatus Hermetis sapientia triplicis, in arte uero ab omnibus insipientibus occultatos, de Arabico in Latinum transfere conati sumus».

(*lāmiyya*) of 448 verses. The Arabic text has been edited in Stapleton, Hidāyat Ḥusain, & Turāb 'Alī 1933, 3-14. The Latin text is available in *Theatrum Chemicum* 1602-1661, vol. 5 (1622), 220a-20b; the text is partially quoted in the *Rosarium philosophorum* found in Manget 1702, 2:115-16, and in the *Consilium coniugii* in Manget 1702, 2:17-51. A Latin text based on these three editions can be found in Stapleton, Hidāyat Ḥusain, & Turāb 'Alī 1933, 148-52 (*non cum iniustitia*). See also Sezgin 1971, 283-88, Ullmann 1972, 218, Ronca 1995.

14. Senior Zadith's *Tabula chemica*. The *Tabula chemica*, also called *Senior de chemia* (inc.: *intravi ego et Oboel charissima barba in [...]* THK 773, and see also 458, 1428), is the translation of the *Kitāb al-mā' al-wa-raqī wa-al-arḍ al-najmiyya* (*Book of the Silvery Water and the Starry Earth*), which is considered by the author as the commentary on his *Risālat al-shams ilā al-hilāl* (and contains it). The Arabic text was edited in Stapleton, Hidāyat Ḥusain, & Turāb 'Alī 1933, 1-104. The Latin text can be found in *Theatrum Chemicum* 1602-1661, vol. 5 (1622), 219a-66 and was reprinted with notes in Stapleton, Hidāyat Ḥusain, & Turāb 'Alī 1933, 144-97. See also Ruska 1936a, Sezgin 1971, 283-88, Ullmann 1972, 218-20, Ronca 1995.

15-17. Out of the large corpus of texts attributed to Jābir b. Ḥayyān, namely the most famous corpus of alchemical treatises in the Arab-Muslim world, only three texts have been translated.

15. Geber's *Liber de septuaginta*. The first one is another of the three translations of alchemical treatises that are attributed to Gerard of Cremona (1114-1187): the *Liber divinitatis de septuaginta*. This title is actually misleading, since it refers only to the first treatise of the *Liber de septuaginta* of Geber (the Latin name of Jābir), the *Kitāb al-lāhūt* (*Book of the Divine Nature*), while Gerard translated the entire *Kitāb al-sab'īn* attributed to Jābir b. Ḥayyān, which is entirely preserved (inc.: *laudes sint deo habenti gratiam [...]* THK 813). The first ten treatises in Arabic are edited in Lory 1988, and translated into French in Lory 1983. An incomplete edition of the Latin text (based on MS Paris, BnF, lat. 7156, ff. 66v-83v) was published in Berthelot 1906, 310-63, and one finds a critical edition of the third treatise, the *Liber XXX verborum* (*Kitāb al-thalāthīn kalima*), which also circulated separately, in Colinet 2000b, 179-87.

16. Geber's *Liber misericordiae*. The *Liber misericordiae* (inc.: *scias quod res dividitur in duo in inventum [...]* THK 1390) is an anonymous

translation of the *Kitāb al-raḥma* (*Book of Mercy*) attributed to Jābir b. Ḥayyān, not to be confused with his other treatise entitled *Kitāb al-raḥma al-ṣaghīr* (*Little Book of Mercy*). The Arabic text is edited in Berthelot, Houdas, & Duval 1893, 3:132–60 (Ar. pp.), and translated into French in Berthelot, Houdas, & Duval 1893, 3:163–90. The Latin text was edited in Darmstaedter 1925.

17. Geber's *Liber regni*. The last Jābirian treatise to have been translated is the *Kitāb al-mulk* (*Book of Kingship*): the text has been translated, or, more precisely, abbreviated as the *Liber regni* or *Liber regis* of Geber (inc.: *hunc librum separavimus ab aliis libris ut puta utiliore[m] [...] THK 646*). The Arabic text is edited in Berthelot, Houdas, & Duval 1893, 3:91–98 (Ar. pp.), and translated into French in Berthelot, Houdas, & Duval 1893, 3:126–32. The Latin text has been edited and translated into English in Newman 1994, 288–93.

The other Latin texts attributed to Geber are pseudepigraphs (*Summa perfectionis*, *De inventione veritatis*, *De investigatione perfectionis*, *Liber fornacum*, *Testamentum Geberi* and *Alchemia Geberi*).

18–19. The name of Khālīd b. Yazīd, the famous prince who is claimed to have been an alchemist, is attached to two Latin texts⁸¹.

18. Calid's *Liber secretorum alchemiae*. The *Liber secretorum alchemiae* is a translation from Arabic (various incipits, see THK 518, 590, 820, 823, 826)⁸². The text has never been thoroughly studied so far. Manfred Ullmann showed some parallels with quotations from Abū al-Ḥasan al-Ḥalabī's *Kitāb al-shawāhid fī al-ḥajar al-wāḥid* (*Book of the testimonies on the unique stone*) (see Ullmann 1972, 194). It was edited in [Chrysogonus Polydorus (Andreas Osiander?)] 1541, 338–62, *Alchemiae Gebri* 1545, 274–93, Gratarolo 1561b, 1:233–42, *Artis auriferae* 1572, 349–76, *Artis auriferae* 1593, 325–51, *Theatrum Chemicum* 1602–1661, vol. 5 (1622), 209a–16b, Manget 1702, 2:183–89. The text is attributed to Calid filius Iazichi and is presented as a translation of a Hebrew text into Arabic, then into Latin (p. 349)⁸³: *Liber secretorum alchemiae compositus per Calid filium Iazichi, translatus ex Hebraeo in Arabicum, & ex Arabico in Latinum, incerto interprete*. The author quotes a disciple of his

81. On this figure, see also below, p. 116. The *Liber trium verborum* is also sometimes attributed to Khālīd b. Yazīd, see below number 30.

82. Concerning the *Liber trium verborum*, see below.

83. The pages quoted for this text in this paragraph are the ones in the edition of 1572 of the *Artis Auriferae*.

called Musa (Mūsā, i.e. Moses) (350), and explains that he wrote this book at the end of his life (351): *edidi hunc meum librum in obitu meae mortis*. The author could not be the genuine Khālīd b. Yazīd, since he quotes Jābir b. Ḥayyān (Geber filius Hayen) (371), but this does not exclude the possibility of an Arabic origin, since the chronological incoherence could come from the Arabic original. The author also quotes *Euclides* (357), *dictum Aristotelis qui dixit suo discipulo Ardae* (358), *Mezleme* (Maslama b. Qāsim al-Qurṭubī?)⁸⁴ (358), *Plato in suis sermonibus* (365), *Hermes* (365), *Bauzan philosophus Graecus* (372). The text contains several Arabic words: *azot vivo* (for *azoc*, *al-zā'ūq*) (351), *colore alsufir quod est nimis rubeum* (*al-ṣufra*, i.e. yellowness, but redness and yellowness are often conflated in regard to the colour of gold) (357–58), *aludela* (*al-uthāl*) (358–59), *Corascenen* (*Khurāsān*) (365), *Armenie* (*Armīniya*) (365), *Garib* (*gharīb*) *id est aliquid aliud* (367), and *vase Chalcofolario* (*al-kuhl*?)⁸⁵ (374, 376). I have also seen two words for which I cannot identify an origin: *Yharit id est argentum et plumbum album* (357), and *Temeynchum quod est aurum* (358). On p. 367–68, we read a quotation of the *Secretum secretorum* that does not correspond to a known Latin version⁸⁶.

19. Calid's *Primo necesse est in hac arte* [...]. We can also find in various manuscripts a short text attributed to Khālīd b. Yazīd with the incipit *Primo necesse est in hac arte* [...] (THK 1107)⁸⁷. Marion Dapsens and I have been able to identify the Arabic original, which is a passage of a *Risāla* attributed to Khālīd b. Yazīd preserved in several manuscripts. Marion Dapsens and I are currently preparing an article on this text with the edition of the Arabic and Latin texts.

20–22. The third alchemical treatise said to have been translated by Gerard of Cremona is a *Lumen luminum*. However, in the current state of research, one cannot identify which text Gerard translated, since there are several translated texts with this title, and the situation

84. The name Maslama is not common in Arabic alchemy, and the author could here point to Maslama b. Qāsim al-Qurṭubī, the author of the *Rutbat al-ḥakīm* and the *Ghāyat al-ḥakīm*. This would be the only known Latin quotation of the *Rutba*.

85. Maybe a vessel made from an alloy containing antimony or lead, *alcofol* meaning stibnite or galena, see Moureau 2016a, 245–46.

86. The passage corresponds to Steele 1920, 114–15.

87. For this study, I have used manuscript Cambridge, Trinity College, O.8.25, ff. 148r–149r.

is quite complex. One can find a preliminary clarification in Colinet 1992, 2:111-16, to be read with my additional remarks here. As far as I have seen, out of the various texts called *Lumen luminum*, three are, or are very likely, translations from Arabic; no Arabic original of these texts has been found.

20. *Lumen luminum*. The first is the *Lumen luminum* (inc.: *cum de sublimiori atque precipuo rerum effectum* [...] THK 290) sometimes anonymous, sometimes attributed to Rāzī or Aristotle, and once to Avicenna. In manuscript Kues, Bibliothek im St. Nikolaus Hospital, 299, f. 85r, the treatise is preceded by a prologue in which the text is said to have been translated from Chaldean into Latin by a certain Raymond citizen of Marseilles, perhaps the astronomer Raymond of Marseilles (fl. 1141)⁸⁸. No Arabic original has been preserved, and a thorough study should be done in order to ascertain that the text is a translation. Extracts from the text have been edited in Ruska 1939, 56-65.

21. *Lumen luminum ex libris medicorum*. The *Lumen luminum ex libris medicorum* (inc.: *lumen luminum dicitur ex libris medicorum et experimentis* [...] THK 833), anonymous or attributed to Rāzī, is very likely a Latin translation of a lost Arabic treatise. No study has been done on the work but I found many Arabic transcriptions in the text, which seems to indicate an Arabic origin⁸⁹. However, the treatise might be a Latin compilation of recipes, some of which have an Arabic origin. Another *Lumen luminum* is attributed to Elias of Cortona (c. 1170/1180-1253) (inc.: *incipit liber qui lumen luminum dicitur ex libris* [...] THK 732). This text is usually considered a Latin composition of Elias, but when looking at manuscript Florence, Biblioteca Riccardiana, L. III. 13. 119, f. 166r, I have found the following incipit: *Incipit liber alchimalis quem frater helya edidit apud fredericum Imperatorem. Liber lumen luminum transactus de sarraceno ac arabico in latinum a fratre cypriano ac compositus in latinum a generali fratrum minorum super alchimis*. So the treatise is meant to be a translation by a certain frater Cyprianus, whom I have

88. On this, see Colinet 1992, vol. 2, p. 111, and Colinet 1995, 1018. On Raymond of Marseilles, see Poulle 1975.

89. For instance (I have used MS Florence, Biblioteca Riccardiana, L. III. 13. 119, ff. 137r-142v), f. 137r: an ammoniac salt *qui de chorascem apportetur* (*Khurasān*); *alumen iameni* (*yamani*); f. 137v: *tuthia* (*tūtiyā*); *sal sabachi* (*milḥ sabakhī*); a salt which *vocatur rabai tardi* (*milḥ ṭabarzād?*). Many places situated in or close to Arab-Muslim territories are quoted: Egypt, Armenia, Spain, Syria, Tripoli, etc.

not been able to identify, working with Elias with the four-hand method of translation⁹⁰. However, this *Lumen luminum* actually shows very close similarities with the *Lumen luminum ex libris medicorum*: except for the first paragraphs, I have seen that the beginning of both treatises (ff. 166r-167r and ff. 137r-138r of the manuscript of the Riccardiana) is almost the same; the two differ only later in the text. In addition to this, it appeared to me that books 3-6 (from f. 169v, *Explicit liber tercius alkyimie Incipit quartus liber eiusdem et prologus super eo Subtiliter in rebus naturalibus consideraui* to f. 171v, *verum est largior et melior habundantius operans et sublimior*) are actually a literal quotation of chapters 1-7 of the *Epistola ad Hasen regem*⁹¹. There is also a recipe using the *lapis adebessi* on f. 173r, but I could not find this recipe in the various recensions of the *Liber dabessi* (on this, see above, p. 110). One might, therefore, question the role of frater Cyprianus and Elias of Cortona: the mention of their work was maybe taken from another treatise, maybe from some earlier version of the *Lumen luminum ex libris medicorum*, or even forged for the occasion. Further investigation of these two texts will probably bring new conclusions.

22. Michael Scot's *Lumen luminum*. A fourth *Lumen luminum* (inc.: *cum rimarer et inquirerem secreta naturae* [...] THK 336) is attributed to Michael Scot (d. before 1236). This text is usually considered a composition of Michael Scot, but in manuscript Florence, Biblioteca Riccardiana, L. III. 13. 119, f. 35v, one finds the mention: «translatus a Magistro Michaele Scoto philosopho». The treatise could therefore be a translation by instead of a composition by Michael Scot, although there is no evidence to solve the question. The text shows close links with Michael Scot's *Liber Dedali*. The text is edited in Brown 1897, 240-69, along with the *Liber Dedali*.

Colinet also points out the title *Lumen luminum* in various other contexts⁹²: Pseudo-Aristotle's *De perfecto magisterio* (see above p. 107) is called *Lumen lumminum* in manuscript Paris, BnF, lat. 6514, f. 120r; a *Lumen luminum* is attributed to Geber in Pseudo-Avicenna's *De anima*⁹³; Avicenna's *De mineralibus* is called *Lumen luminum* in manuscript Toledo, Biblioteca capitular, 94018, f. 266r; and there is a short

90. On this method, see Burnett 2008b, 1232.

91. *Theatrum Chemicum* 1602-1661, vol. 4, 1659, 863-72.

92. Colinet 1992, vol. 2, 114.

93. Moureau 2016b, vol. 2, 909.

treatise entitled *Lumen luminum de coloribus* in the single manuscript Paris, BnF, lat. 6749b, ff. 62v-63r, which is not an alchemical treatise.

23. *Tractatus Micreris suo discipulo Mirnefindo*. The *Tractatus Micreris suo discipulo Mirnefindo* (inc.: *Mirnefindus interrogans ait iuste magister [...]* THK 876) is the Latin translation of the Arabic treatise entitled *Kitāb Mihrārīs al-ḥakīm ilā tilmīdhi-hi Marwārīd* (*Book of Mihrārīs the Wise to His Disciple Marwārīd*), also called *Kitāb al-dhahab* (*Book of Gold*), a theoretical text written in the form of a dialogue between Mihrārīs and his disciple. The Arabic text is not edited, see Sezgin 1971, 105-6 and Ullmann 1972, 177-78. The Latin text is edited in *Theatrum Chemicum* 1602-1661, vol. 5 (1622), 101-13. See also Ruska 1931, 320-23.

24. Morienus's *Liber de compositione alchemiae*. The *Liber de compositione alchemiae* is often considered the first complete Latin translation of an Arabic alchemical treatise, made in 1144 in the Ebro valley, maybe by Robert of Chester. It is the translation of the *Risālat Maryānus al-rāhib a-ḥakīm li-al-amīr Khālīd b. Yazīd* (*Epistle of the Wise Monk Maryanos to the Prince Khālīd b. Yazīd*), the Arabic original of which is still preserved, relating a dialogue between the Greek monk Marianos and the Umayyad Prince Khālīd b. Yazīd, in all likelihood a legend⁹⁴. For a recent status quaestionis, see Dapsens 2016 and Bacchi & Martelli 2009. The critical edition of the Arabic text is currently being prepared by Marion Dapsens for her PhD, and extracts can be found in al-Hassan 2004. The Latin text was edited in Stavenhagen 1974, but this text is not the most reliable; a new Latin edition is being prepared by Marion Dapsens. The authenticity of the prologue of the translation attributed to Robert of Chester has been questioned, especially in Ruska 1924, 35, and addressed again in Lemay 1990-1991, but the question is still open (see also Kahn 1990-1991). See also above, about the Hermetic *Septem tractatus* (p. 109).

25-26. Two Latin texts attributed to the Ancient philosopher Plato can be listed among the translations⁹⁵.

94. On the legend of Khālīd b. Yazīd alchemist, see Ruska 1924, Ullmann 1978.

95. The *Liber super aptationem lapidis pretiosi* that is found in manuscript Florence, Biblioteca Riccardiana, L. III. 13. 119, f. 11r-2v is actually a quotation of Alphidius's *Liber ad filium suum* (on this, see above p. 105); the passage corresponds to ff. 142r, l. 26-146v, l. 9 (i.e. not the entire book, but almost).

25. Pseudo-Plato's *Liber quartorum*. The first one is the *Liber Platonis quartorum* or *Quantum Platonis Scolasticorum* (various incipits, see THK 255, 336, 456, 458, 496, 604), the translation of Pseudo-Plato's *Kitāb al-rawābī'* (*Book of the Fourths*). The text is attributed to Plato with a commentary in the form of a dialogue between Thābit b. Qurra and Abū al-'Abbās Aḥmad b. al-Ḥusayn b. Jahār Bukhtār. For the status quaestionis on this text, see Singer 1946, Thillet 2000–2003, Thillet 2005. The Arabic text was edited in Badawī 1977, 118–239. There is no critical edition of the Latin version yet, but the text was edited in *Theatrum Chemicum* 1602–1661, vol. 5 (1622), 114–208.

26. Pseudo-Plato's *Liber de tredecim clavibus sapientie maioris*. The second text is the *Liber Platonis de tredecim clavibus sapientie maioris*, a short treatise of which no Arabic original has been found (inc.: *narraverunt quod in terra Romanorum [...]* THK 899). It is preserved in the single manuscript Venezia, San Marco, lat. Z. 324 (= 1938), ff. 20v–26r, where it is described as a translation made in 1301: *Incipit liber Platonis de XIII clavibus sapientie maioris translatus de arabico in latinum anno domini 1301*. The text contains various transcriptions from Arabic (for instance *annohas*, for *al-nuḥās*, *zaybach*, for *zaybaq*, etc.). I plan to edit this text. See also Singer 1946, 124.

27. *Practica* of the Palermo manuscript 4 Qq A10. In their article on Theophilus' alchemy in 1994, Carmelia Opsomer and Robert Halleux point to a *Practica* in manuscript Palermo, Biblioteca comunale, 4 Qq A10. This text might have an Arabic original and might be one of the earliest witnesses of alchemy in the Latin West, since it was maybe known by Alphanus of Salerno (d. 1085)⁹⁶. But this remains hypothetical.

28. Bubacar's (Rāzī) *Liber secretorum*. Although many alchemical Latin texts are attributed to Rāzī, only one is, in the current state of research, known to be a translation of the famous physician and alchemist. The *Liber secretorum Bubacaris* is the partial Latin translation (inc.: *liber iste dividitur in duas partes scilicet [...]* THK 820), or more precisely a paraphrase, of the *Kitāb al-asrār* (*Book of Secrets*) of Rāzī (Abū Bakr Muḥammad b. Zakariyā' al-Rāzī), a very influential Arabic text which is still extant. The Arabic text was edited in Dānish-Pazhūh 1964, 1–116, translated into German in Ruska 1937 (Ruska did not know

96. Opsomer & Halleux 1994.

at that time that he was working on the *Kitāb al-asrār* instead of the *Kitāb sirr al-asrār*, hence the German title), and partially translated into English in Stapleton, Azo, & Hidāyat Ḥusain 1927, 369–93. The Latin text was studied and partially edited in Ruska 1935b.

29. *Liber utilitatis naturae secretorum*. To Rāzī is also sometimes attributed the *Liber utilitatis naturae secretorum* (inc.: *incipit liber utilitatis naturae secretorum floridis veri sextices [...]* / *incipit liber utilitatis nature secreta floridis verisque tectoriis [...]* THK 732). The treatise is also sometimes attributed to Elias of Cortona, or left anonymous. The text has never been studied. A first approach reveals several clues pointing to an Arabic origin (I have used manuscript Florence, Biblioteca Riccardiana, L. III. 13. 119, ff. 113r–120r). The treatise contains various Arabic words: some are very common, and thus not necessarily indicating that the text is a translation, such as *alembic* or *alembich* (*al-anbīq*), *alumen iameni* (*shabb yamanī*, alum of the Yemen), *athanor* (*al-tannūr*, the furnace), *exir* (*īksīr*, elixir), *botum bar* (*būṭ bar būṭ*, a purification device), *malgama* (verb derived from *mulgham*, amalgam), *thucia* (*tū-tiyā*, tutty), etc. It also contains rare words, which are not frequently found in works other than translations: I note *çimar* or *açimar* (*al-zinjār*, verdigris, ff. 114r, 118v, 119v), *ocap* or *ocab* (*‘uqāb*, eagle, meaning the ammoniac salt, ff. 115r–116r, 117r–119v), *billaur* (*billawr*, crystal, f. 116v), *albotheca* (*al-būṭīqa*, crucible, f. 116v), *kiberit* (*kibrīt*, sulphur, ff. 117r, 118v), *chiminam* or *kinninam* (*qinnīna*, bottle, ff. 117v, 119r), *alumen alaşfor* (*al-shabb al-aşşar*, yellow alum, f. 118r), *karatis* or *karactarani* (*qirāt*, unit of weight, carat, ff. 118v–119r), *aurum obriz* or *obruz* (*dhahab ibrīz*, pure gold, ff. 119r, 120r), *calcant* (*qalqand*, type of vitriol, f. 119v), and words that I have not identified but seem to come from the Arabic: *cufor* (*kāfūr*? camphor, f. 114v), *aloecaph* or *aloe caph* or *aloe cabab* (ff. 115r–v), *aseb zucharinum* (f. 115v), *cerinch* or *cernich* (*zarnīkh*? arsenic, cf. 117r), *robec* (f. 117v), *reçabum* (f. 118r), *atinpar* (for *al-tinkār*? a kind of borax, f. 118v), *çeci* or *açegi* (*al-zāj*? vitriol, ff. 118v, 119v), *aboca* (f. 119r), *alfatidam* or *alfadide* (f. 119v), *thucie aſon* (f. 120r). There is also one geographical term, *alumen de alap* (f. 115v) or *alumen alaph* (f. 117v), alum of Aleppo, but we also find two expressions *vitreo-lum viride arabicum* (ff. 114v, 119r) and *crocus arabicus* (f. 114v) which would be strange in an Arabic text. In addition to this, the variation of vocabulary throughout the text seems to reveal that the text is a series of recipes collected from various sources. So, it might be that the text is a later compilation of recipes, some of which are taken

from translations from Arabic, but others not. I have found no Arabic treatise with a similar title; it must not be confused with Geber's *Liber utilitatis*, which is the title of book 37 (*Kitāb al-manāfi'*) of the *Liber de septuaginta*. A deeper study is required to solve the issue.

30–31. In two Latin treatises that contain strong evidence of an Arabic origin, we find the name of an author unknown elsewhere: Rachaidibi (or Riccadibis).

30. Rachaidibi's *Liber trium verborum*. The first is the *Liber trium verborum*, also sometimes attributed to Khālīd b. Yazīd because of its title (*Liber trium verborum Kallid acutissimi*, inc.: *lapis iste de quo fit hoc opus* [...] THK 810), but attributed to Rachaidibi in the text and Kallid Rachaidibi in the explicit⁹⁷. The text has never been studied so far. It has been edited in the incunabulum of the Pseudo-Geber's *Summa Perfectionis* (probably Rome, 1486–1488, by the «printer of Vitruvius»)⁹⁸, in Sabeo 1525, Sabeo 1542, 106b–110b, *Artis auriferae* 1572, 377–86, *Artis auriferae* 1593, 352–61, *Theatrum Chemicum* 1602–1661, vol. 5 (1622), 217a–9b, Manget 1702, 2:189–91. On p. 384⁹⁹, we read: «*Philosophus regis Persarum et principis Romanorum dixit...*» This phrase seems actually to designate the author himself, as can be seen in the *De materia philosophici lapidis* (see below in this page). The version in the *Theatrum Chemicum* and in Manget contains a prologue which is not in the other versions; this prologue is similar to a passage in the *Semita recta* attributed to Albert the Great, in Borgnet & Borgnet 1908, 547. One finds several terms in the text that I cannot identify but which may have an Arabic origin: *almec* (*Artis auriferae*, 5:384), *albechir* (384), *maenchen* (385–86), *diethen* (385–86). The author quotes *Raxit Aedianus et omnes philosophi Persarum* (385), of whom I have not been able to find any other mention. The text contains a rare word to designate a colour, *ialneus* (386) (yellow, from the old French *ialne*), which also appears in the other text attributed to Rachaidibi.

31. *De materia philosophici lapidis*. Another text mentions Rachaidibi as one of its co-authors, the *De materia philosophici lapidis* (inc.: *sperma lapidis est frigidum et humidum...* THK 1522). This treatise has never

97. Albert the Great quotes the work and attributes it to Callisthenes, see Wyckoff 1967, 171, 283.

98. *Gesamtkatalog der Wiegendrucke*, vol. 9 (1989), col. 322–323, n° 10566.

99. The pages quoted for this text in this paragraph are the ones in the edition of 1572 of the *Artis Auriferae*.

been studied, and is edited in Sabeo 1525, Sabeo 1542, 122a-125b, *Artis auriferae* 1572, 1:425-33 [...]. The context of the dialogue is described as follows (430)¹⁰⁰: *Omnes philosophi Persae congregati fuerunt in uno loco in montaneis partibus et erat locus secretus odoriferus, et inter illos multi multis modis dixerunt: ex tincturis quae tingunt metalla, et mutant in solem altum et preciosum*. The text contains many transcriptions of Arabic terms: *aquam Safferanicam* (za'farānī) (427), *endacuto* (īndīqūn?) (427), *Anatron sive sal nitrum* (al-naṭrūn) (428), *atinkar* (al-tinkār) (428), *color Safferanicus* (za'farānī) (430), *aqua saffranica* (za'farānī) (432), *athenor* (al-tannūr) (432), *phaulet* (fūlādh) uel *endanicum* (i.e. steel) (4 times, 433), *Safferanum* (za'farān) (433). The same rare term appears as in the *Liber trium verborum*: *ialneus* (twice, 428) and *ialdus* (432).

32. *Liber sacerdotum*. The *Liber sacerdotum*, also called *Liber Iohannis* (various incipits, see THK 167, 1367, 1460, 1613, 1618), is a collection of recipes, of which a large part seem to be translated from Arabic (no original is currently known), and is full of transcriptions from Arabic. Other parts of the text were composed in Latin, and the treatise contains passages related to the *Mappae Clavicula*. See Berthelot, Houdas, & Duval 1893, 1:69-70, 81-87, and Ruska 1936b. The text was edited in Berthelot, Houdas, & Duval 1893, 1:179-228, to be read with the corrections proposed in Corbett 1939-1951, 1:18-36 and 292-309. A short version (paragraphs 1-25) also circulated, and is sometimes found in manuscripts under the title *Liber secretorum Alkindi*¹⁰¹.

33-35. One of the most famous Latin translations of an Arabic treatise is the *Turba philosophorum*.

33. *Turba philosophorum*. The *Turba philosophorum* (numerous incipits, see in the index of THK) is the Latin translation of the Arabic *Muṣḥaf al-jamā'a* (*Book of the Assembly*), written around 900 and attributed to Archelaos (Arshilāwus). The text is written under the form of a dialogue between philosophers. This work was very influential, and has been widely studied. Only fragments and partial quotations of the Arabic text are preserved. The Arabic fragments and the Latin text are edited and studied in Ruska 1931, and the Latin text alone has been

100. The pages quoted for this text in this paragraph are the ones in the edition of 1572 of the *Artis Auriferae*.

101. See for instance manuscript Jena, Thüringer Universitäts- und Landesbibliothek, MS El. q. 18, ff. 6vb - 8rb, and Vatican, Biblioteca Apostolica Vaticana, Pal. lat. 1328, ff. 45v-48v.

edited and studied in Lacaze 2018. See also Sezgin 1971, 60–66, Ullmann 1972, 213–16, Plessner 1975, Hallum 2009, Kahn 2010.

34. *Visio Arislei*. Another treatise is attributed to Archelaos, the *Visio Arislei* (various incipits). The *Visio* is likely the Latin translation of the *Risālat madd al-baḥr dhāt al-ru'yā* (*Epistle of the rise of the sea, containing a vision*) attributed to Archelaos, which has not been preserved and is known through a single quotation by Tughrā'ī (see Kraus 1942, 42, n. 5, and Kraus 1943, 181). This work is linked with the *Turba philosophorum*, see Ullmann 1972, 153. The Latin text is edited in Ruska 1931, 323–28, and translated into German in Ruska 1930.

35. *Allegoriae sapientum super librum turbae*. The *Allegoriae sapientum super librum turbae* are a series of dialogues between philosophers (various incipits, see THK 560, 561, 747, 749, 1408). Its form is reminiscent of the *Turba philosophorum*, and these two works often circulated together in the manuscript tradition¹⁰². The text, or at least parts of the text, seems to be a translation from Arabic and contains transcriptions of Arabic terms, but it would require a deep investigation in order to have a better idea of its origin. The Latin text was edited in *Theatrum Chemicum* 1602–1661, vol. 5 (1622), 64–100, and Manget 1702, 1:467–79¹⁰³. See also Ruska 1931, 329–33.

36. Rosinus's *Epistola secunda ad Euthiciam*. Five Latin treatises are attributed to Zosimos, under his Latin name Rosinus, the difference between the Arabic *rā'* and *zāy* being only one dot. Out of them, only one has been proven to be a translation from Arabic, and the others are (or seem to be) Latin compositions. The *Epistola secunda Rosini ad Euthiciam* (inc.: *inquit Euthesia iam Rosine in doctrinis [...]* THK 747) has been identified by Bink Hallum as the translation of the Arabic *Muṣḥaf al-ṣuwar* (*Book of images*), which is itself a reworking of the Arabic *Epistle 3* of Zosimos, of which the Greek original has not been preserved, as explained in Hallum 2008, 271–74, 455–63. A facsimile of the *Muṣḥaf al-ṣuwar* has been published in Abt 2007, and the Arabic

102. Kahn 2003, 301.

103. The *Allegoria sapientum* contains the *Dicta Socratis ad Platonem* (p. 80–81 of the edition in the *Theatrum Chemicum*), which Robert Halleux wrongly considered as a separate translation in Halleux 1979, 66 and asserted that the Arabic original is preserved, referring to Ullmann 1972, 154 (where the text is considered a part of the *Allegoria sapientum* and no Arabic original is mentioned). No Arabic original is actually known, see also Sezgin 1971, 94–96.

text was edited in Abt & Fuad 2007; but see the important remarks on these publications in Hallum 2009¹⁰⁴.

The text entitled *Rosinus ad Sarratantam Episcopum* in two books that is found in *Artis auriferae* 1572, 1:299–308 (1st part) and 308–13 (2nd part) is not a translation from Arabic. The first part of the book (inc.: *venerande pater aures inclina et intellige dicta mea* [...] THK 1683) has been identified in Calvet 2011, 24–26 as a version of the *Semita semitae* of Pseudo-Arnald of Villanova, which is itself a reworking of the pseudo-Arnaldian *Flos florum*. The second part of the treatise (inc.: *sequitur quomodo termini per similitudinem* [...]) has not been identified yet.

The treatise entitled *Rosinus de divinis interpretationibus* (inc.: *primo sciendum quatuor esse modos* [...]) in two books, also called *liber definitionum* in the explicit, THK 1112), which is found in *Artis auriferae* 1572, 1:313–31, is sometimes quoted among translations from Arabic. However, in my opinion, the text is instead a later Latin compilation. The text cannot be a treatise of Zosimos, since it is filled with numerous quotations of later authors¹⁰⁵: Morienus and Kalid (319–20); Geber (326); Rasis (316, 326), his *Liber luminum* (318, 322) and a *Liber lunarum* (319), maybe a mistake for the same *Liber luminum*; the *Turba philosophorum* (316–17, 320); Senior/Ibn Umayl (317, 323–24); Galienus (maybe Galen or Balinus) (327); a certain Alpharinus (Al-Fārābī?) (317) and a certain Dantius (326). The author also quotes and comments upon several sentences that are similarly found and commented upon (although with a different commentary) in the *Consilium coniugii*¹⁰⁶. The fact that the author quotes Ibn Umayl under the name «Senior» is an argument in favour of the idea that the treatise was compiled in Latin, since Ibn Umayl was known as such only in the Latin world¹⁰⁷. One finds only a few Arabic transliterations in

104. As Bink Hallum has shown (Hallum 2008, 273, based on a remark in Stapleton, Hidāyat Ḥusain, & Turāb ‘Alī 1933, 150, n. 4), one must pay attention to the fact that the *Epistola secunda* was, at a certain time in the tradition, considered the second part of a larger work, and that another text was added to it, being actually an excerpt of Senior Zadith’s *Tabula chemica* (see above p. 111), as can be seen in the text entitled *Rosinus ad Euthiciam* published in *Artis auriferae* 1572, vol. 1, 267–98.

105. I do not mention here the quotation attributed to Socrates (321) and Zeno (324).

106. The passage of the text is p. 315, and the one in the *Consilium coniugii* is in *Theatrum Chemicum* 1602–1661, vol. 5 (1622), 511.

107. The idea of a translator who knew that Ibn Umayl was called Senior in Latin is not very convincing.

the text, most of which are quite well known; the only rare word is *sandarich*, but the author probably took it from Senior's *Tabula chemica*, where the word is used once to transcribe *zarnīkh* (arsenic)¹⁰⁸.

Another text directly follows in *Artis auriferae* 1572, 1:331-40 (inc.: *mando hic est lapis non lapis* [...] THK 847), without any title but inserted among the texts attributed to Rosinus/Zosimos. As the *Liber de divinis interpretationibus*, this text seems not, in my opinion, to be a translation, but rather a later compilation of Latin alchemical excerpts. Again, the text cannot be a work by Zosimos, since we find numerous quotations of Arabic authors or names¹⁰⁹: Mahomet (331), Massarai (332), Geber Sarracenus (332-33, 340), Rasis (334), Morienus (334). A passage of the treatise (337-38) is a shortened version of an extract of the *Rosini de divinis interpretationibus* (326-27, same edition), from the quotation of Dantius to the quotation of Galienus. On p. 333-34¹¹⁰, there is a tacit quotation of the *Liber dabessi* (on this text, see above, p. 110), close to the version of the stone of the scorpion as edited in Colinet 1995, 1047; and on p. 331-32, a quotation attributed to a Dealesi Hermes can be found in the «Egyptian version» of the *Liber dabessi* edited in Steele & Singer 1928, 493, where the quotation is attributed to «adebesi Hermes». Almost no transcription from Arabic can be identified in the text.

The *Liber divinarum interpretationum et definitionum Rosini* is a much shorter text which directly follows the previous one in *Artis auriferae* 1572, 1:340-43 (inc.: *recipe lapidem qui est niger, rubeus, citrinus* [...]). As is the case with the two previous treatises attributed to Zosimos, this one also seems to be a later compilation rather than a translation. The text quotes Hermes (341), Rasis (341), Geber (343), and abundantly Morienus (341-42). No transcription from Arabic is found in the text.

108. *Theatrum Chemicum* 1602-1661, vol. 5 (1622), 189.

109. I do not include Aristoteles (333).

110. Pages 334 and 335 are wrongly numbered 336 and 337 in the edition of 1572.

Besides these translations of alchemical texts, we can add a few texts that were not initially alchemical, but that came to be considered alchemical or frequently used by alchemists.

37–38. Two texts related to alchemy that are attributed to Aristotle are translations from Arabic.

37. Pseudo-Aristotle's *Secretum secretorum*. The *Sirr al-asrār* is a work written in the form of instructions given by Aristotle, and contains a section on alchemy. The work is obviously pseudepigraphic. There are various versions in Arabic, notably a short one (7 or 8 books) and a long one (10 books). See Peters 1968, 67–72, Manzalaoui 1974, Grignaschi 1976, Manzalaoui 1977, Schmitt & Ryan 1982, Williams 2003, and Van Bladel 2004. The Arabic long version was edited in Badawī 1954, 65–171. Both versions were translated into Latin. The short version was translated by John of Seville around 1120 under the title of *Epistula ad Alexandrum de dieta servanda* or *De regimine sanitatis*; it was edited in Suchier 1883, 473–80. However, since this short version does not contain the section on alchemy, it has not been counted in this paper. The long version was translated by Philip of Tripoli around 1220 under the title *Secretum secretorum*; it was edited, along with Roger Bacon's commentary on this version, in Steele 1920. The work contains a version of the Emerald tablet (on its version, see Mandosio 2003).

38. Pseudo-Aristotle's *Liber lapidum*. A *liber lapidum* wrongly attributed to Aristotle is the translation of the *Kitāb al-ahjār li-Arīṣṭāṭālīs* (*Book of Stones of Aristotle*), a lapidary often quoted by alchemists. The Arabic and Latin versions were edited in Ruska 1912, and the Latin text alone had previously been edited in Rose 1875. See also Wellmann 1924, Klein-Franke 1930, and Peters 1968, 59–61.

39. Avicenna's *De mineralibus*. The *De mineralibus* of Avicenna, better known under the false title *De congelatione et conglutinatione lapidum* (actually the title of only the first section), is the translation of a part of the fifth *fann* of the *Ṭabī'īyyāt* (*Natural [Philosophy]*) of Ibn Sīnā's *Kitāb al-shifā'* (*Book of Healing*) entitled *Kitāb al-ma'ādin wa-al-āthār al-'ulwiyya*. This text on mineralogy occupied an important place in the Latin debate over the possibility of transmutation. The Latin translation was made around 1190 by Alfred of Sareshill, who used Avicenna's text to complete the fourth book of Aristotle's *Meteorology* already translated by Henry Aristippus (the first three books

having been translated by Gerard of Cremona), yet without quoting Avicenna's authorship. Therefore, the text was attributed to Aristotle by many medieval scholars. The Arabic text is edited in Holmyard & Mandeville 1927, 70–86 (English translation, 17–42), and in other various editions, among which Madkūr *et al.* 1964, 22–23. A critical edition is available in Rubino & Pagani 2016 (see also Holmyard & Mandeville 1927, 45–55, partial version in Newman 1991, 48–51, French 1999, 121–29). See also Mandosio & Di Martino 2006, Mandosio 2014, Moureau 2016a, 11–18, Mandosio 2018.

40. Pseudo-Apollonius of Tyana's *De secretis creationis*. The *De secretis creationis* of Balinus is the translation of the *Kitāb sirr al-khalīqa* (*Book of the Secret of Creation*) or *Kitāb al-'ilal* (*Book of Causes*) of Balinus (pseudo-Apollonius of Tyana), probably dating from the beginning of the ninth century. Although the text was not itself an alchemical treatise, it was very soon considered by Arabic alchemists as an alchemical text (for instance, in the Jābirian corpus). This cosmological text contains a version (most likely the original) of the Emerald tablet. It was translated around 1150 by Hugo Sanctalliensis, when he was working for the bishop Michael of Tarazona (1119–1151). Contrary to the Arabic text, the Latin version poorly circulated (there exists presently only one known manuscript, and its version of the Emerald Tablet is quoted nowhere else). The Arabic text was edited in Weisser 1979 and a German summary provided in Weisser 1980; it was partially translated into Italian in Pappacena 2000. The Latin version was edited in Hudry 1997–1999. See also Travaglia 2001. On the Emerald Tablet, see Ruska 1926, Caiazza 2003, Mandosio 2003.

41. *Lapidary of Alfonso X el Sabio*. The *Lapidary of Alfonso X el Sabio* is the name given to a series of four lapidaries preserved in manuscript Biblioteca del Real Monasterio de San Lorenzo del Escorial, H.I. 15. The lapidary is said to have been translated in 1250 by a certain Abolays, who has not been identified (various hypotheses in Darby 1936). A facsimile of manuscript H.I. 15 is available in Fernández Montaña 1881, and the text was edited in Brey Mariño 1968, Diman & Winget 1980, and Rodríguez M. Montalvo 1981. This lapidary contains several alchemical passages, which are studied in Nune-maker 1929. See also the article of Jean-Patrice Boudet in the present volume, 143–65. Another lapidary is often added to it, the *Libro de las formas & ymagenes*, preserved in manuscript Biblioteca del Real Monasterio de San Lorenzo del Escorial, H.I. 16.

Out of these 41 texts, 23 have an Arabic original that is preserved (2-4, 6-8, 10, 13-17, 19, 23-25, 28, 33, 36-40), one has an Arabic original identified but not preserved (34), and 17 have no Arabic original preserved. Out of these 17 treatises, one is unquestionably a translation (9), 11 are likely translations (11-12, 18, 20, 22, 26, 29-31, 35, 41), and 5 may be translations but remain dubious (some only slightly dubious, 21, 27, 32, others highly, 1, 5). This makes a total of 25 certain translations (21 alchemical, 4 related to alchemy), and 16 possible translations (15 alchemical, 1 related to alchemy).

Only a very small number of the translators of alchemical texts have been identified: out of the 41 texts in question here, only 10 have a translator mentioned, and even for these 10 texts, the identification of the translator is not always certain and clear: Robert of Chester (24, but uncertain), Gerard of Cremona (3, 15), Raymond of Marseilles (20, but uncertain), a certain unidentified Frater Cyprianus (21), Michael Scot (22), Philip of Tripoli (37), Hugo Sanctalliensis (40), Alfred of Sareshill (39), and a certain unidentified Abolays (41). Most of the translations of alchemical texts remain anonymous. And concerning the geographical area of translation of these texts, we have even fewer indications, although some texts contain hints that can help suggest a geographical identification (see for instance 9).

Dating the translations of alchemical texts remains impossible in most cases. Only a few of them are dated: 3 are given a date in manuscripts (to be considered cautiously), 1144 (Morienu's *Liber de compositione alchemiae*, 24), 1226 or 1235 (Pseudo-Avicennian *De anima*, 9), 1301 (Pseudo-Plato's *Liber de tredecim clavibus*, 26), and 6 can be roughly dated thanks to the mention of the translator or other historical elements, c. 1150 (Pseudo-Apollonius of Tyana's *De secretis creationis*, 40), before 1187 (*De aluminibus et salibus*, 3, and Geber's *Liber de septuaginta*, 15), c. 1190 (Avicenna's *De mineralibus*, 39), c. 1220 (Pseudo-Aristotle's *Secretum secretorum*, 37), before 1236 (Michael Scot's *Lumen luminum*, 22). One cannot assert anything beyond the obvious fact that the translations of Arabic alchemical texts were done during the translation movement from Arabic into Latin in the twelfth and thirteenth centuries.

It is very hard to determine how the translators made their choice among the corpus of Arabic alchemical texts that was available to them. Indeed, one can hardly identify a valid criterion: there is no distinction according to the content, since they translated theoretical

(Rachaidibi's *Liber trium verborum*, 30)¹¹¹ as well as technical (*De aluminibus et salibus*, 3) and allegorical (Senior Zadith's *Tabula chemica*, 14) texts; there is no distinction according to the form, since they translated prose descriptions (Artefius's *Clavis maioris sapientiae*, 8) as well as dialogues (*Responsiones Aros ad Nephes*, 6), poems (Senior Zadith's *Epistola Solis ad lunam crescentem*, 13), recipe collections (*Liber dabessi*, 12) and doxographies (*Turba philosophorum*, 33); there is no distinction according to the influence, since they translated influential texts (Geber's *Liber de septuaginta*, 15) as well as texts that had no influence at all in the Arab-Muslim world (Pseudo-Avicennian *De anima*, 9). However, one feature somewhat stands out in many alchemical translations: authority (not to be confused with influence). Indeed, many translated alchemical texts are attributed to very authoritative figures in the Arab-Muslim world, both in alchemy, such as Zosimos, Khālid b. Yazīd, Jābir b. Ḥayyān, Rāzī, Ibn Umayl, and in a more general point of view Plato, Aristotle, Avicenna, Hermes, etc. So, a first hypothesis could be that the translators chose the texts that they considered the most eminent. But this is not a universal observation, since a few texts do not have any kind of authoritative mark (as the *De aluminibus et salibus* or the *Liber sacerdotum*). Nonetheless, another hypothesis may also be suggested: the translators might simply have translated the texts that were available to them. This could also be an explanation for the authority question: the most authoritative texts had a greater chance of being at the translators' disposal. But observations on Arab-Latin translations in other fields of knowledge are not in favour of this conjecture, since a certain coherence in the choice of several translators has been noticed (especially in Toledo)¹¹².

Determining the motivations of the translators when translating alchemical texts is another question to address. We find part of the answer in the prologue to the *Liber de compositione alchemiae* (24), where the translator (Robert of Chester?) argues that he translated the text because alchemy was unknown in the West¹¹³. Besides this idea, one may also put forward a few cautious conjectures. Since alchemy was

111. The numbers between the brackets here and below are pointing to examples, and do not list all the texts falling in the category.

112. See Burnett 2001.

113. «Et quoniam quid sit Alchymia, et quae sit sua compositio, nondum vestra cognovit latinitas, in praesenti sermone elucidabo». Lemay 1990-1991, 6.

a new science, translators might have wanted to fill in a gap in Latin culture by bringing in an unknown science. In addition, alchemy was useful to Latin scholars from a theoretical and doctrinal point of view, by introducing the necessary elements to build a mineralogy. There is also a practical usefulness in alchemy; even if, actually, textual alchemy is often more the work of literate scholars than of craftsmen, alchemy had already a long tradition of practice, and had the reputation of carrying knowledge on the means of working on materials and changing them (dyes, etc.). And among these techniques, gold making was an attractive part of alchemy for many¹¹⁴. One may easily imagine a patron asking a scholar to translate alchemical texts with the aim of making gold. As another motivation, one may highlight the place of alchemy in the classification of sciences in the Arab-Muslim world. For instance, in Dominicus Gundissalinus's *De divisione philosophiae* (a treatise based on the *De ortu scientiarum*, a translation from an Arabic treatise)¹¹⁵, alchemy is listed among the parts of natural science. Therefore, alchemy was a reasonable science to translate, and scholars with a coherent program of translation such as Gerard of Cremona translated alchemical texts. However, these remain hypotheses, and must be considered as such.

Conclusion

Alchemy was transmitted from the Arab-Muslim lands to the Latin world in the twelfth and thirteenth centuries. This science was already a very well-developed field in the Arab-Muslim world, while it was almost completely unknown to Latin scholars before the translation movement. Thereafter, the core concepts of Arabic alchemy were present in the corpus of Latin translations as we know it at present, thereby establishing a basis of continuity. However, some changes also appeared, since the corpus of translations was limited and not necessarily representative of the full situation in Arabic alchemy. For instance, the massive series of texts attributed to Jābir b. Ḥayyān scarcely came to the Latin West, and the most quoted «Jābir» in Latin

¹¹⁴. Vergil, *Aen.*, III, 56–57: «Quid non mortalia pectora cogis, auri sacra fames!»

¹¹⁵. See n. 44.

is in fact the Pseudo-Geber of the *Summa perfectionis*. In addition, some concepts were impossible to translate, such as the Jābirian *mīzān al-ḥurūf*, the balance of the letters, a system for calculating the elementary properties of things according to their Arabic names. However, when restricting ourselves to the corpus of translations, we can see quite a strong continuity between Arabic and Latin alchemy. Yet the evolution of Latin alchemy rapidly modified this starting situation, and Latin alchemy quickly developed its own doctrines and concepts, both via Latin and pseudo-Arabic texts.

The corpus of Latin translations of Arabic alchemical texts also indicates that alchemy had a greater literary success in al-Andalus than what one could think at first. Indeed, if we know only one Arabic alchemical Andalusī text up to now, the *Rutbat al-ḥakīm*, we also know that translators had access to numerous alchemical texts that were circulating in al-Andalus. Further research on alchemy in al-Andalus will certainly bring new indications to light. Other paths of transmission of alchemical texts, such as the court of Frederick II (for scholars like Michael Scot, Jacob Anatoli, Elias of Cortona, etc.) or a Near Eastern route, need to be explored as well.

The transmission of alchemy from the Arab-Muslim world to the Latin West provides a rare case where a science penetrates a cultural area in which it was previously unknown. This gives modern scholars the possibility of studying how the medieval Latin world received a new science, how it assimilated it and developed it. This article contributes to that study, and aims at providing an initiatory list of Latin translations of alchemical Arabic texts. However, this list is not exhaustive, and could not be exhaustive given the current state of our knowledge. Coming to the end of my article, I would like to stress the desiderata of researchers on alchemy's transmission. As a main need, we require new inventories of early alchemical Latin manuscripts, which will certainly bring new translations to light. Secondly, we need more critical editions of these translations, as well as in-depth studies of them. This will allow us to enlarge and refine the corpus. And when this work is done, we will have the opportunity to study the corpus of translations of alchemical texts systematically, in order better to define the foundations upon which Latin alchemy was born.

Bibliography

- ‘Abd al-Rahmān b. Muḥammad b. Qāsim 1995 = Ibn Taymiyya, *Majmū‘ al-fatāwā*, ed. by ‘Abd al-Rahmān b. Muḥammad b. Qāsim, Medina 1415 H 1995, 37 vol.
 Abt 2007 = T. Abt, *The Book of Pictures. Muṣḥaf Aṣ-Ṣuwar by Zosimos of Panopolis. Facsimile with an Introduction*, Zurich 2007, (Corpus Alchemicum Arabicum, II.1).
- Abt & Fuad 2007 = T. Abt and S. Fuad, *The Book of Pictures. Muṣḥaf Aṣ-Ṣuwar by Zosimos of Panopolis. Edition of the Pictures and Introduction*, Zürich 2007, (Corpus Alchemicum Arabicum, II.2).
- al-Bustānī 1957 = B. al-Bustānī (ed.), *Rasā’il Ikhwān al-Ṣafā’*, Beirut 1957, 4 vol.
- al-Hassan 2004 = A.Y. al-Hassan, «The Arabic Original of *Liber de compositione alchemiae*, the Epistle of Maryānus, the Hermit and Philosopher, to Prince Khālīd ibn Yazīd», *Arabic Sciences and Philosophy*, 14 (2004), 213–31.
- Alchemiae Gebri* 1545 = *Alchemiae Gebri Arabis philosophi solertissimi, Libri, cum Reliquis*, Bern: Mathias Apiarius, Johann Petreius, 1545.
- G. Anawati 1959 = G. Anawati, «L’alchimie du bonheur, d’Ibn ‘Arabī (Kīmyā’ al-sa’āda)», *Mélanges de l’Institut Dominicain d’Études Orientales du Caire*, 6 (1959), 353–86.
- G. C. Anawati 1971 = G. C. Anawati, «Avicenne et l’alchimie», in *Oriente e Occidente nel Medioevo: filosofia e scienze, Convegno internazionale 9-15 aprile 1969*, Roma 1971, (Accademia nazionale dei Lincei. Fondazione Alessandro Volta. Atti dei convegni, 13), 285–341.
- Arnauld 1612 = P. Arnauld (transl.), *Trois traictez de la philosophie naturelle, non encore imprimez. Scavoir, Le secret livre du tres ancien Philosophe Artephius, traictant de l’Art occulte et transmutation Metallique, latin françois. Plus Les figures hieroglyphiques de Nicolas Flamel... Ensemble Le vray Livre du docte Synesius....*, Paris: veuve M. Guillemot et S. Thiboust, 1612.
- Ars chemica* 1566 = *Ars chemica, quod sit licita recte exercentibus, probationes doctissimorum Iuriconsultorum. Septem tractatus seu capitula Hermetis Trismegisti, aurei. Eiusdem Tabula smaragdina, in ipsius sepulchro inuenta, cum commento Hortulani Philosophi. Studium consilii coniugii de massa solis et lunae. Opuscula, studiosi artis secretisimae, ut summe necessaria, ita lectu iucundissima*, Strasbourg: Emmel, 1566.
- Artefii Clavis Maioris Sapientiae* 1609 = *Artefii Clavis Maioris Sapientiae. Nunc primum, in lucem prodit*, Paris: s.e., 1609.
- Artis auriferae* 1572 = *Artis auriferae quam chemiam vocant, antiquissimi authores, sive turba philosophorum*, 1st ed., Basel: Pietro Perna, 1572, 2 vol.
- Artis auriferae* 1593 = *Artis auriferae quam chemiam vocant, antiquissimi authores, sive turba philosophorum*, 2nd ed., Basel: Conrad Waldkirch, 1593, 2 vol.
- ‘Aṭā, & ‘Aṭā 1987 = Ibn Taymiyya, *al-fatāwā al-kubrā*, ed. by Muḥammad ‘Abd al-Qādir ‘Aṭā, Muṣṭafā ‘Adb al-Qādir ‘Aṭā, Beirut 1987, 6 vol.
- Ateş 1953 = A. Ateş, «Ibn Sina, Risālat al-iksīr», *Türkiyat Mecmuası*, 10 (1953), 27–54.
- Bacchi & Martelli 2009 = E. Bacchi and M. Martelli, «Il principe Ḥālīd bin Yazīd e le origini dell’alchimia araba», in D. Cevenini and S. D’Onofrio (ed.), *‘Uyūn al-Akḥbār. 3. Conflitti e dissensi nell’Islam*, Bologna 2009, 85–120.
- Badawī 1954 = ‘Abd al-Rahmān Badawī, *Al-Uṣūl al-Yūnāniyya li-al-naẓariyyāt al-siyāsiyya fī al-Islām / Fontes Graecae doctrinarum politicarum Islamicarum*, Cairo 1954, (Dirāsāt Islāmiyya, 15).

- Badawī 1977 = 'Abd al-Raḥmān Badawī, *Al-Aflāṭūniyya al-muḥdatha 'inda al-'arab / Neoplatonici apud Arabes*, 2nd ed. (1st ed. Cairo 1955), Kuwayt city 1977.
- Baeumker 1916 = C. Baeumker, *Alfarabi, Über den Ursprung der Wissenschaften (De ortu scientiarum). Eine mittelalterliche Einleitungsschrift in die philosophischen Wissenschaften*, Münster 1916, (Beiträge zur Geschichte der Philosophie des Mittelalters. Texte und Untersuchungen, 19, 3).
- Barbier de Meynard & Pavet de Courteille 1861-1877 = Mas'ūdī, *Les prairies d'or*, ed. & trans. by C. Barbier de Meynard and A. Pavet de Courteille, Paris 1861-1877 (Collection d'ouvrages orientaux), 9 vol.
- Berthelot 1906 = M. Berthelot, «Archéologie et histoire des sciences», *Mémoires de l'Académie des sciences de l'Institut de France*, 49 no. 2 (1906), 1-377.
- Berthelot, Houdas, & Duval 1893 = M. Berthelot, O.V. Houdas, and R. Duval, *Histoire des sciences. La chimie au Moyen Âge*, Paris 1893, 3 vol.
- Borgnet 1890 = Albert the Great, *Beati Alberti Magni, Ratisbonensis Episcopi, ordinis praedictorum opera omnia*, ed. by A. Borgnet, Paris 1890, vol. 5.
- Borgnet & Borgnet 1908 = Albert the Great, *Beati Alberti Magni, Ratisbonensis Episcopi, ordinis praedictorum opera omnia*, ed. by A. Borgnet and E. Borgnet, Paris 1908, vol. 37.
- Boudet, Caiozzo, & Weill-Parot 2011 = J.-P. Boudet, A. Caiozzo, and N. Weill-Parot, *Image et Magie. Picatrix entre Orient et Occident*, Paris 2011.
- Brewer 1859 = R. Bacon, *Opera quaedam hactenus inedita*, vol. 1, (*Opus tertium, Opus minus, Compendium philosophiae*), ed. by J. S. Brewer, London 1859.
- Brey Mariño 1968 = M. Brey Mariño, *Alfonso X, Rey de Castilla. Lapidario*, Madrid 1968 (Otres nuevos).
- Brown 1897 = J. W. Brown, *An Enquiry into the Life and Legend of Michael Scot*, Edinburgh 1897.
- Brunet-Jailly 1998 = Adam de Brême, *Histoire des archevêques de Hambourg, avec une Description des îles du Nord*, ed. by J.-B. Brunet-Jailly, Paris 1998 (L'aube des peuples).
- Burnett 1976 = C. Burnett, «The Legend of the Three Hermes and Abū Ma'shar's *Kitāb al-Ulūf* in the Latin Middle Ages», *Journal of the Warburg and Courtauld Institutes*, 39 (1976), 231-34.
- Burnett 1992 = C. Burnett, «The Astrologer's Essay of the Alchemist: Early References to Alchemy in Arabic and Latin Texts», *Ambix*, 39 no. 3 (1992), 103-9.
- Burnett 2001 = C. Burnett, «The Coherence of the Arabic-Latin Translation Program in Toledo in the Twelfth Century», *Science in Context*, 14 (2001), 249-88.
- Burnett 2008a = C. Burnett, «*Nīranj*: A Category of Magic (Almost) Forgotten in the Latin West», in C. Leonardi and F. Santi (ed.), *Natura, Scienze e Società Medievali, Studi in Onore di Agostino Paravicini Bagliani*, Firenze 2008, 37-66.
- Burnett 2008b = C. Burnett, «Translation from Arabic into Latin in the Middle Ages», in H. Kittel, A. P. Frank, N. Greiner, T. Hermans, W. Koller, J. Lambert, and F. Paul (ed.), *Übersetzung. Translation. Traduction. Encyclopédie Internationale de La Recherche Sur La Traduction*, Berlin 2008, 2:1231-37.
- Caiazzo 2003 = I. Caiazzo, «Note sulla fortuna della *Tabula smaragdina* nel Medioevo latino», in P. Lucentini, I. Parri, and V. Perrone Compagni (ed.), *Hermetism from Late Antiquity to Humanism. La tradizione ermetica dal mondo tardo-antico all'umanesimo. Atti del Convegno internazionale di studi, Napoli, 20-24 novembre 2001*, Turnhout 2003, 697-711.
- Callataÿ 2013 = G. de Callataÿ, «Magia en al-Andalus: *Rasā'il Ijwān al-Ṣafā'*, *Rutbat al-Ḥakīm y Gāyat al-Ḥakīm (Picatrix)*», *Al-Qanṭara*, 34 no. 2 (2013), 297-343.

- Callataÿ & Moureau 2015 = G. de Callataÿ and S. Moureau, «Towards the Critical Edition of the *Rutbat al-ḥakīm*: A Few Preliminary Observations», *Arabica, Revue d'études arabes et islamiques*, 62 (2015), 385-94.
- Callataÿ & Moureau 2016 = G. de Callataÿ and S. Moureau, «Again on Maslama Ibn Qāsim al-Qurṭubī, the Ikhwān al-Ṣafā'... and Ibn Khaldūn: New Evidence from Two Manuscripts of the *Rutbat al-ḥakīm*», *Al-Qanṭara*, 37 no. 2 (2016), 329-72.
- Callataÿ & Moureau 2017 = G. de Callataÿ and S. Moureau, «A Milestone in the History of Andalusī Bāṭinism: Maslama b. Qāsim al-Qurṭubī's *Riḥla* in the East», *Intellectual History of the Islamicate World*, 5 no. 1-2 (2017) (Intellectual History of the Islamicate World), 86-117.
- Calvet 2011 = A. Calvet, *Les œuvres alchimiques attribuées à Arnaud de Villeneuve. Grand œuvre, médecine et prophétie au Moyen Âge*, Paris 2011, (Textes et travaux de Chrysopœia, 11).
- Calvet 2012 = A. Calvet, «L'alchimie du Pseudo-Albert le Grand», *Archives d'histoire doctrinale et littéraire du Moyen Âge*, 79 no. 1 (2012), 115-60.
- Caprotti 2013 = G. Caprotti, «*Mappae clavicula*: prescrizioni della prima alchimia storica nei precedenti di lingua greca», in S. Baroni, G. Pizzigoni, and P. Travaglio (ed.), *Mappae clavicula: Alle origini dell'alchimia in Occidente. Testo, traduzione, note*, Gennaio 2013, (Artifices, scritti tecnici per l'arte e l'architettura), 219-36.
- Carusi 2000 = P. Carusi, «Alchimia Islamica e Religione: La legittimazione difficile di una Scienza della Natura», in C. Baffioni (ed.), *Religion Versus Science in Islam: A Medieval and Modern Debate*, Roma 2000, (Numero Monografico Di Oriente Moderno, 19, n° 3), 461-502.
- Carusi 2002 = P. Carusi, «Il trattato di filosofia alchemica "Miftāḥ Al-Ḥikma" ed i suoi testimoni presso la Biblioteca Apostolica», *Miscellanea Bibliothecae Apostolicae Vaticanae*, 9 (2002), 35-84.
- [Chrysogonus Polydorus (Andreas Osiander?)] 1541 = [Chrysogonus Polydorus (Andreas Osiander?)], *In Hoc Volumine De Alchemia Continentur Haec ...*, Nürnberg: Johann Petreius, 1541.
- Clagett 1970 = M. Clagett, «Adelard of Bath», in C. C. Gillispie (ed.), *Dictionary of Scientific Biography*, New York 1970, 1:61-64.
- Colinet 1992 = A. Colinet, *L'anonyme de Zuretti, Un traité alchimique grec du 14^e siècle*, Louvain-la-Neuve 1992, PhD thesis (Université catholique de Louvain).
- Colinet 1995 = A. Colinet, «Le Livre d'Hermès Intitulé *Liber Dabessi* ou *Liber Rebis*», *Studi Medievali*, 36 no. 2 (1995), 1011-52.
- Colinet 2000a = A. Colinet (ed.) A. Colinet (transl.), *Les Alchimistes grecs X. L'Anonyme de Zuretti ou l'Art sacré et divin de la chrysopée par un anonyme*, Paris 2000, (Collection des universités de France).
- Colinet 2000b = A. Colinet, «Le Travail des quatre éléments ou lorsqu'un alchimiste byzantin s'inspire de Jabir», in I. Draelants, A. Tihon, and B. Van den Abeele (ed.), *Occident et Proche-Orient. Contacts scientifiques au temps des Croisades. Actes du colloque de Louvain-la-Neuve, 24 et 25 mars 1997*, Turnhout 2000, (Réminiscences, 5), 165-90.
- Compendium alchimiae 1560 = *Compendium Alchimiae. Ioannis Garlandii Angli Philosophi Doctissimi, Cum Dictionario Eiusdem Artis; Atque de Metallorum Tinctura Praeparationeque Eorundem Libello; Ante Annos DXX. Eodem Authore Conscripto. Adiecimus Eiusdem Compendii per Arnoldum de Villanova Explicationem. Cum Tractatu de Salium Aluminumque Varietate, Compositione et Usu, Scriptoris Incerti*, Basel: Pietro Perna, 1560.

- Corbett 1939-1951 = J. Corbett, *Catalogue des manuscrits alchimiques latins*, Bruxelles 1939-1951, 2 vol.
- Dānīsh-Pazhūh 1964 = Abū Bakr b. Zakariyyā Rāzī, *Kitāb al-asrār wa-sirr al-asrār*, ed. by M. T. Dānīsh-Pazhūh, Tehran 1964.
- Dapsens 2016 = M. Dapsens, «De la *Risālat Maryānus* au *De Compositione alchemiae*. Quelques réflexions sur la tradition d'un traité d'alchimie», *Studia Graeco-Arabica*, 6 (2016), 121-40.
- Darby 1936 = G. O. S. Darby, «The Mysterious Abolays», *Osiris*, 1 (1936), 251-59.
- Darmstaedter 1925-1928 = E. Darmstaedter, «Liber Claritatis Totius Alkimicae Artis», *Archivio Di Storia Della Scienza*, 6 (1925), 319-30; 7 (1926), 257-65; 8 (1927), 95-103, 214-29; and *Archeion*, 9 (1928), 63-80, 191-208, 462-64.
- Darmstaedter 1925 = E. Darmstaedter, «Liber Misericordiae Geber. Eine lateinische Übersetzung des grösseren *Kitāb alrahma*», *Archiv für Geschichte der Medizin*, 17 (1925), 181-97.
- Delorme 1934 = S. Bonaventure, *Collationes in Hexaëmeron et Bonaventuriana quaedam selecta ad fidem codd. mss.*, ed. by F. Delorme, Quaracchi (Firenze) 1934, (Bibliotheca Franciscana scholastica Medii Aevi, 8).
- Diman & Winget 1980 = R. C. Diman and L. W. Winget, *Alfonso El Sabio. Lapidario and Libro de la formas e ymagenes*, Madison 1980, (Spanish series (Hispanic Seminary of Medieval Studies), 3).
- Dodwell 1986 = C. R. Dodwell (ed. and transl.), *Theophilus, The Various Arts, De Diversis Artibus*, 2nd ed. (1st ed. 1961), Oxford 1986, (Oxford Medieval Texts).
- Dunyā 1958 = Ghazālī, *Tahāfut al-falāsifa*, ed. by S. Dunyā, 4th ed. (1st ed. 1958), Cairo s. d., (Dhakhā'ir al-'Arab, 15).
- Fernández Montaña 1881 = J. Fernández Montaña, *Lapidario del rey D. Alfonso X. Codice original*, Madrid 1881.
- Ferrario 2004 = G. Ferrario, «Il Libro degli allumi e dei sali: status quaestionis e prospettive di studio», *Henoch*, 26 no. 3 (2004), 275-96.
- Ferrario 2009 = G. Ferrario, «An Arabic Dictionary of Technical Alchemical Terms: MS Sprenger 1908 of the Staatsbibliothek Zu Berlin (Fols. 3r-6r)», *Ambix*, 56 no. 1 (2009), 36-48.
- Fidora & Werner 2007 = D. Gundissalinus, *De divisione philosophiae* = *Über die Einteilung der Philosophie: Lateinisch - Deutsch*, ed. & trans. by A. Fidora and D. Werner, Freiburg 2007, (Herders Bibliothek der Philosophie des Mittelalters, 11).
- Fierro 1996 = M. Fierro, «Bāṭinism in Al-Andalus. Maslama b. Qāsim Al-Qurṭubī (d. 353/964), Author of the *Rutbat Al-Ḥakīm* and the *Ghāyat Al-Ḥakīm* (Pica-trix)», *Studia Islamica*, 84 no. 2 (1996), 87-112.
- Flügel 1845 = 'Alī b. Muḥammad Jurjānī, *Kitāb al-Ta'rifāt*, ed. by G. Flügel, Leipzig 1845.
- Forcada 2017 = M. Forcada, «Books from Abroad: The Evolution of Science and Philosophy in Umayyad al-Andalus», *Intellectual History of the Islamicate World*, 5 no. 1-2 (2017), 55-85.
- French 1999 = R. French, «Teaching Meteorology in Thirteenth-Century Oxford: The Arabic Paraphrase», *Physis, Rivista Internazionale di Storia della Scienza*, 36 (1999), 99-129.
- Gilly 1977 = C. Gilly, «Zwischen Erfahrung und Spekulation :Theodor Zwinger und die religiöse und kulturelle Krise seiner Zeit», *Basler Zeitschrift für Geschichte und Altertumskunde*, 77 (1977), 57-137.
- Gloton 2006 = 'Alī b. Muḥammad Jurjānī, *Le livre des définitions* (Kitāb al-ta'rifāt). Traduction, introduction et annotations, transl. by M. Gloton, Beirut 2006.

- Gratarolo 1561a = J. de Rupescissa, *Ioannis de Rupescissa de consideratione quintae essentiae rerum omnium, opus sane egregium*, ed. by G. Gratarolo, Basel: Pietro Perna, 1561.
- Gratarolo 1561b = G. Gratarolo (ed.), *Verae alchemiae artisque metallicaе citra aenigmata doctrina certusque modus...*, Basel: Pietro Perna, 1561.
- Gratarolo 1572 = G. Gratarolo (ed.), *Alchemiae quam vocant, artisque metallicaе, doctrina, certusque modus, scriptis tum nouis, tum veteribus, duobus his Voluminibus comprehensus*, Basel: Pietro Perna, 1572.
- Grignaschi 1976 = M. Grignaschi, «L'origine et les métamorphoses du "Sirr al-asrār" (Secretum secretorum)», *Archives d'histoire doctrinale et littéraire du Moyen Âge*, 43 (1976), 7-112.
- GW ab 1925 = *Gesamtkatalog Der Wiegendrucke*, Leipzig ab 1925.
- Halleux 1979 = R. Halleux, *Les textes alchimiques*, Turnhout 1979, (Typologie des sources du Moyen Âge occidental, 32).
- Halleux 1983 = R. Halleux, «Le mythe de Nicolas Flamel ou les mécanismes de la pseudépigraphie alchimique», *Archives Internationales d'Histoire des Sciences*, 33 (1983), 234-55.
- Halleux 1997 = R. Halleux, «La réception de l'alchimie arabe en Occident», in R. Rashed (ed.), *Histoire des sciences arabes, III: Technologie, alchimie et sciences de la vie*, Paris 1997, 143-54.
- Halleux & Meyvaert 1987 = R. Halleux and P. Meyvaert, «Les Origines de La *Mappae Clavicula*», *Archives d'histoire doctrinale et littéraire Du Moyen Âge*, 54 (1987), 7-58.
- Hallum 2008 = B. Hallum, *Zosimus Arabus: The Reception of Zosimos of Panopolis in the Arabic/Islamic World*, London 2008, PhD thesis (Warburg Institute).
- Hallum 2009 = B. Hallum, «The *Tome of Images*: an Arabic Compilation of Texts by Zosimos of Panopolis and a Source of the *Turba Philosophorum*», *Ambix*, 56 no. 1 (2009), 76-88.
- Hawthorne & Smith 1979 = J. G. Hawthorne and C. S. Smith, *Theophilus. On Divers Arts: The Foremost Medieval Treatise on Painting, Glassmaking and Metalwork*, New York 1979.
- Holmyard 1928 = E. J. Holmyard, *The Arabic Works of Jābir ibn Ḥayyān edited / Muṣannaḡāt fī 'ilm al-kīmīyā' li-al-ḥakīm Jābir ibn Ḥayyān al-Sūfī*, Paris 1928, vol. 1.
- Holmyard & Mandeville 1927 = E. J. Holmyard and D. C. Mandeville, *Avicennae De congelatione et conglutinatione lapidum: Being Sections of the Kitāb al-shifā'*, Paris 1927.
- Hudry 1997-1999 = F. Hudry, «Le *De secretis nature* du Ps. Apollonius de Tyane, traduction latine par Hugues de Santalla du *Kitāb sirr al-khalīqa*», *Chrysopoeia*, 6 (1997-1999), 1-154.
- Ibn Sīnā 1935 = Ibn Sīnā, *Majmū' rasā'il al-shaykh al-ra'īs*, Hyderabad 1935.
- Ilg 1874 = A. Ilg, *Theophilus presbyter schedula diversarum artium: I. Band*, Wien 1874, (Quellenschriften für Kunstgeschichte und Kunsttechnik des Mittelalters und der Renaissance, 7).
- C. Johnson 1983 = C. Johnson (ed. and transl.), *Dialogus de Scaccario, The course of the Exchequer, by Richard, Fitz Nigel. And Constitutio Domus Regis, The Establishment of the Royal Household*, 2nd ed. (1st ed. 1950), Oxford 1983 (Oxford Medieval Texts).
- R. P. Johnson 1939 = R. P. Johnson, *Compositiones Variæ, from Codex 490, Biblioteca Capitolare, Lucca, Italy, an Introductory Study*, Urbana 1939, (Illinois Studies in Language and Literature, 23, n° 3).

- Kacimi 2013 = M. Kacimi, «Nuevos datos sobre la autoría de la *Rutbat al-ḥakīm* y la *Gāyat al-ḥakīm* (o *Picatrix*)», *eHumanista/IVITRA*, 4 (2013), 237-56.
- Kahn 1990-1991 = D. Kahn, «Note sur deux manuscrits du Prologue attribué à Robert de Chester», *Chrysopæia*, 4 (1990-1991), 33-34.
- Kahn 1995 = D. Kahn, «Les manuscrits originaux des alchimistes de Flers», in D. Kahn and S. Matton (ed.), *Alchimie: art, histoire et mythes. Actes du I^{er} colloque international de la Société d'Étude de l'Histoire de l'Alchimie*, Paris, Collège de France, 14-16 mars 1991, Paris-Milano 1995, (Textes et Travaux de Chrysopæia, 1), 347-427.
- Kahn 2003 = D. Kahn, «Recherches sur le Livre attribué au prétendu Bernard de Trévisan (fin du XV^e siècle)», in C. Crisciani and A. Paravicini Bagliani (ed.), *Alchimia e medicina nel Medioevo*, Firenze 2003, (Micrologus, 9), 265-336.
- Kahn 2010 = D. Kahn, «The *Turba Philosophorum* and Its French Version (15th C.)», in M. López Pérez and D. Kahn (ed.), *Chymia: Science and Nature in Early Modern Science (1450-1750)*, Newcastle 2010, 70-114.
- Kahn 2018 = D. Kahn, «Généalogie de l'alchimie et interprétation alchimique de la Bible au XIV^e siècle: Qui fuerint primi inventores hujus artis», *Archives d'histoire doctrinale et littéraire du Moyen Âge* (2018).
- Käs 2010 = F. Käs, *Die Mineralien in der arabischen Pharmakognosie. Eine Konkordanz zur mineralischen Materia medica der klassischen arabischen Heilmittelkunde nebst überlieferungsgeschichtlichen Studien*, Wiesbaden 2010, (Akademie der Wissenschaften und der Literatur. Veröffentlichungen der orientalischen Kommission, 54), 2 vol.
- Klein-Franke 1930 = F. Klein-Franke, «The Knowledge of Aristotle's Lapidary during the Latin Middle Ages», *Ambix*, 17 no. 3 (1930), 137-42.
- Kraus 1935 = Jābir ibn Ḥayyān, *Jābir ibn Ḥayyān, Essai sur l'histoire des idées scientifiques dans l'Islam. Volume I, Textes choisis / Mukhtār rasā'il Jābir ibn Ḥayyān*, ed. by P. Kraus, Paris 1935.
- Kraus 1939 = Abū Bakr b. Zakariyyā Rāzī, *Rasā'il falsafiyya. Al-juzʿ al-awwal / Opera philosophica fragmentaque quae supersunt. Pars prior*, ed. by P. Kraus, Cairo 1939, (Jāmi'at Fu'ād al-awwal, kullīyya al-ādāb, 22).
- Kraus 1942 = P. Kraus, *Jābir ibn Ḥayyān, contribution à l'histoire des idées scientifiques dans l'Islam. Volume II, Jābir et la science grecque*, Cairo 1942, (Mémoires présentés à l'Institut d'Égypte, 45).
- Kraus 1943 = P. Kraus, *Jābir ibn Ḥayyān, contribution à l'histoire des idées scientifiques dans l'Islam. Volume I, Le corpus des écrits jābiriens*, Cairo 1943, (Mémoires présentés à l'Institut d'Égypte, 44).
- Lacaze 2018 = G. Lacaze, *Turba philosophorum. Congrès pythagoricien sur l'art d'Hermès*, Leiden 2018, (Philosophia antiqua, 150).
- Laoust & Soudel 1984 = H. Laoust and D. Soudel, «Ibn Taymiyya. Traité sur la ḥisba», *Revue des études islamiques*, 52 (1984), 19-108, 1-95.
- Leeuwen & Ferré 1992 = Abū 'Ubayd al-Bakrī, *Kitāb al-masālik wa-al-mamālik*, ed. by A. van Leeuwen and A. Ferré, Tunis 1992, 2 vol.
- Lemay 1990-1991 = R. Lemay, «L'authenticité de la Préface de Robert de Chester à sa traduction du *Morienus*», *Chrysopæia*, 4 (1990-1991), 3-32.
- L'Escalopier 1843 = C. de L'Escalopier (ed.), *Théophile, prêtre et moine, Essai sur divers arts, Diversarum artium schedula*, Paris 1843.
- Levi della Vida 1938 = G. Levi della Vida, «Something More about Artefius and His *Clavis Sapientiae*», *Speculum*, 13 (1938), 80-85.
- Lory 1983 = Jābir ibn Ḥayyān, *Dix traités d'alchimie, les dix premiers traités du livre des Soixante-dix*, transl. by P. Lory, Paris 1983, (La bibliothèque de l'Islam).

- Lory 1988 = Jābir ibn Ḥayyān, *Tadbīr al-iksīr al-a'ẓam / L'élaboration de l'élixir suprême, Quatorze traités de Ḡābir Ibn Ḥayyān sur le Grand Œuvre alchimique*, ed. by P. Lory, Damascus 1988, (Publications de l'Institut français de Damas, 127).
- Lory 2000 = P. Lory, «Eschatologie alchimique chez Jābir ibn Ḥayyān», *Revue des Mondes Musulmans et de la Méditerranée*, 91-92-93-94 (2000), 73-91.
- Lory 2016 = P. Lory, «Aspects de l'ésotérisme chiite dans le Corpus Ḡābirien: Les trois Livres de l'Élément de fondation», *Al-Qantara*, 37 no. 2 (2016), 279-98.
- Madelung 2017 = W. Madelung, *The Book of the Rank of the Sage*, Rutbat al-Hakīm by Maslama b. Qāsim al-Qurṭubī. Arabic Text with an Introduction, Zurich 2017, (Corpus Alchemicum Arabicum, 4).
- Madkūr et al. 1964 = Ibn Sīnā, *Al-Shifā'. Al-Ṭabī'īyyāt*. 5, *Al-ma'ādīn wa al-āthār al-'ulwiyya (La physique*. 5, *Les métaux et la météorologie*), ed. by I. Madkūr, S. Zāyid, 'Abd al-Ḥalīm Muntāṣir, and 'Abd Allāh Ismā'īl, Cairo 1964.
- Mandosio 2001 = J.-M. Mandosio, «Les lexiques bilingues philosophiques, scientifiques et notamment alchimiques à la Renaissance», in J. Hamesse and D. Jacquart (ed.), *Lexiques bilingues dans les domaines philosophique et scientifique (Moyen Âge - Renaissance)*, Turnhout 2001, (Textes et études du Moyen Âge, 14), 175-226.
- Mandosio 2003 = J.-M. Mandosio, «La *Tabula Smaragdina* e i Suoi Commentari Medievali», in P. Lucentini, I. Parri, and V. Perrone Compagni (ed.), *Hermetism from Late Antiquity to Humanism. La Tradizione Ermetica dal Mondo Tardo-Antico all'umanesimo. Atti del Convegno Internazionale di Studi, Napoli, 20-24 Novembre 2001*, Turnhout 2003, 681-96.
- Mandosio 2010 = J.-M. Mandosio, «Humanisme ou barbarie? Formes de la latinité et mémoire de l'Antiquité dans quelques traductions médiévales de textes philosophiques arabes», in H. Casanova-Robin and P. Galand (ed.), *Écritures latines de la mémoire de l'Antiquité au XVI^e siècle*, Paris 2010, 227-63.
- Mandosio 2017 = J.-M. Mandosio, «Compte rendu de Moureau, Sébastien. *Le De anima alchimique du pseudo-Avicenne*. Florence, SISMEL Edizioni del Galluzzo, 2016 (Micrologus Library, Alchemica Latina, 1) I Étude, II Édition critique et traduction annotée», *Kritikon Litterarum*, 44 no. 3-4 (2017), 208-16.
- Mandosio 2018 = J.-M. Mandosio, «Follower or Opponent of Aristotle? The Critical Reception of Avicenna's Meteorology in the Latin World and the Legacy of Alfred the Englishman», in D.N. Hasse and A. Bertolacci (ed.), *The Arabic, Hebrew and Latin Reception of Avicenna's Physics and Cosmology*, Berlin 2018, (Scientia Graeco-Arabica), 459-534.
- Mandosio & Di Martino 2006 = J.-M. Mandosio and C. Di Martino, «La "Météorologie" d'Avicenne (*Kitāb al-Shifā' V*) et sa diffusion dans le monde latin», in *Wissen Über Grenzen: Arabisches Wissen Und Lateinisches Mittelalter*, Berlin 2006, 404-25.
- Manget 1702 = J.-J. Manget (ed.), *Bibliotheca Chemica Curiosa*, Genève: Chouet, 1702, 2 vol.
- Manzalaoui 1974 = M. A. Manzalaoui, «The Pseudo-Aristotelian *Kitāb Sirr al-Asrār*. Facts and Problems», *Oriens*, 23-24 (1974), 147-257.
- Manzalaoui 1977 = M. A. Manzalaoui, *Secretum Secretorum: Nine English Versions*, Oxford 1977, (Early English Text Society, 276).
- Matton 2003 = S. Matton, «Hermès Trismégiste dans la littérature alchimique médiévale», in P. Lucentini, I. Parri, and V. Perrone Compagni (ed.), *Hermetism from Late Antiquity to Humanism. La tradizione ermetica dal mondo tardo-antico all'umanesimo. Atti del Convegno internazionale di studi, Napoli, 20-24 novembre 2001*, Turnhout 2003, 621-49.

- Matton 2017 = S. Matton, *Responsiones Aros philosophi ad Nephes regem de philosophia malis et improbis occulta et sapientibus manifesta. Avec un fac-similé du manuscrits arabe Chester Beatty Ar. 4121*, Paris-Milano 2017, (Anecdota, Collection de textes inédits pour servir à l'histoire des idées, 11).
- Migne 1850 = J.-P. Migne (ed.), *Patrologia Latina*, t. 90. *Bedae venerabilis Anglo-Saxonis presbyteri, Opera omnia*, t. 1, Paris 1850.
- Moureau 2012 = S. Moureau, «Les sources alchimiques de Vincent de Beauvais», *Spicae, Cahiers de l'Atelier Vincent de Beauvais, nouvelle série*, 2 (2012), 5-118.
- Moureau 2013 = S. Moureau, «A Note on Arterphius», *Traditio, Studies in Ancient and Medieval Thought, History, and Religion*, 68 (2013), 324-25.
- Moureau 2016a = S. Moureau, *Le De anima alchimique du pseudo-Avicenne. Volume 1. Étude*, Firenze 2016, (Micrologus Library, 76, Alchemica Latina, 1).
- Moureau 2016b = S. Moureau, *Le De anima alchimique du pseudo-Avicenne. Volume 2. Édition critique et traduction annotée*, Firenze 2016, (Micrologus Library, 76, Alchemica Latina, 1).
- Moureau forthcoming = S. Moureau, «Alchemy and Medicine in the Texts Attributed to Jābir Ibn Ḥayyān and Their Transmission to the Latin World», in J. M. Rampling and P. M. Jones (ed.), *Alchemy and Medicine from Antiquity to the Enlightenment*, Farnham, forthcoming.
- Newman 1991 = W. R. Newman, *The Summa Perfectionis of Pseudo-Geber*, Leiden 1991, (Collection de travaux de l'Académie internationale d'histoire des sciences, 35).
- Newman 1994 = W. R. Newman, «Arabo-Latin Forgeries: The Case of the *Summa Perfectionis* (with the Text of Jābir Ibn Ḥayyān's *Liber Regni*)», in G. A. Russell (ed.), *The «Arabic» Interest of the Natural Philosophers in Seventeenth-Century England*, Leiden 1994, 278-96.
- Nunemaker 1929 = J. H. Nunemaker, «Noticias sobre la alquimia en el «Lapidario» de Alfonso X», *Revista de filología española*, 16 (1929), 161-68.
- Opsomer & Halleux 1994 = C. Opsomer and R. Halleux, «L'alchimie de Théophile et l'abbaye de Stavelot», in *Comprendre et maîtriser la nature au Moyen Âge, mélanges d'histoire des sciences offerts à Guy Beaujouan*, Genève 1994, (Hautes études médiévales et modernes, 73), 437-59.
- Pappacena 2000 = M. Pappacena, *Teologia e cosmologia in un trattato ermetico in lingua araba: il Kitāb sirr al-khalīqa*, Napoli 2000, PhD thesis.
- Pendlebury & Safwat 1991 = D. Pendlebury and N. Safwat, *A Glossary of Sufi Technical Terms Compiled by 'Abd Al-Razzāq Al-Qāshānī*, London 1991.
- Pereira 2003 = M. Pereira, «I *Septem Tractatus Hermetis*. Note per una ricerca», in P. Lucentini, I. Parri, and V. Perrone Compagni (ed.), *Hermetism from Late Antiquity to Humanism. La Tradizione Ermetica dal Mondo Tardo-Antico all'umanesimo. Atti del Convegno Internazionale di Studi*, Napoli, 20-24 Novembre 2001, Turnhout 2003, 651-79.
- Pereira & Spaggiari 1999 = M. Pereira and B. Spaggiari, *Il Testamentum alchemico attribuito a Raimondo Lullo. Edizione del testo latino e catalano dal manoscritto Oxford, Corpus Christi College, 244*, Firenze 1999, (Millennio medievale, 14, Testi, 6).
- Peters 1968 = F. E. Peters, *Aristoteles Arabus. The Oriental Translations and Commentaries on the Aristotelian Corpus*, Leiden 1968, (New York University. Department of Classics. Monographs on Mediterranean Antiquity, 2).
- Plessner 1930 = M. Plessner, «Arabische Alchemie im lateinischen Abendlande», *Orientalistische Literaturzeitung*, 33 (1930), 721-27.

- Plessner 1975 = M. Plessner, *Vorsokratische Philosophie und griechische Alchemie in arabisch-lateinischer Überlieferung. Studien zu Text und Inhalt der Turba philosophorum*, Wiesbaden 1975, (Boethius: Texte und Abhandlungen zur Geschichte der exakten Wissenschaften, 4).
- Pouille 1975 = E. Pouille, «Raymond of Marseilles», in C. C. Gillispie (ed.), *Dictionary of Scientific Biography*, New York 1975, 11:321-23.
- Quatremère 1858 = Ibn Khaldūn, *Prolegomènes d'Ebn Khaldoun, texte arabe publié d'après les manuscrits de la Bibliothèque Impériale / Muqaddimat Ibn Khaldūn*, ed. by É. M. Quatremère, Beirut 1858, 3 vol.
- Rashād Sālim 1991 = Ibn Taymiyya, *Dar' ta'arūd al-'aql wa-al-naql*, ed. by M. Rashād Sālim, 2nd (1^e ed. Riyadh, 1979), Riyadh 1411H 1991, 11 vol.
- Ritter 1933 = Pseudo-Majrītī [Maslama ibn Qāsim al-Qurtubī], *Ghāyat al-ḥakīm wa-aḥaqq al-naṭijātayn bi-al-taqdīm*, ed. by H. Ritter, Leipzig 1933, (Studien der Bibliothek Warburg, 12).
- Ritter & Plessner 1962 = Pseudo-Majrītī [Maslama ibn Qāsim al-Qurtubī], «Picatrix»: *Das Ziel Des Weisen, von Pseudo-Majrītī*, transl. by H. Ritter and M. Plessner, London 1962, (Studies of the Warburg Institute, 27).
- Rodríguez M. Montalvo 1981 = S. Rodríguez M. Montalvo, *Alfonso X. «Lapidario» según el manuscrito Escorialense H.I. 15*, Madrid 1981, (Biblioteca románica hispánica. IV, Textos, 14).
- Ronca 1995 = I. Ronca, «“Senior de Chemia”: A Reassessment of the Medieval Latin Translation of Ibn Umayl's *Al-mā' al-waraqī wa 'l-arḍ al-najmiyya*», *Bulletin de Philosophie Médiévale*, 37 (1995), 9-31.
- Rose 1875 = V. Rose, «Aristoteles *De lapidibus* und Arnoldus Saxo», *Zeitschrift für deutsches Altertum*, 18 (1875), 321-455.
- Rosenthal 1986 = Ibn Khaldūn, *The Muqaddimah. An Introduction to History*, transl. by F. Rosenthal, London 1986 (1st ed. 1958), 3 vol.
- Rubino & Pagani 2016 = E. Rubino and S. Pagani, «Il *De mineralibus* di Avicenna tradotto da Alfredo di Shareshill», *Bulletin de philosophie médiévale*, 58 (2016), 23-87.
- Ruska 1912 = J. Ruska, *Das Steinbuch des Aristoteles, mit Literargeschichtlichen Untersuchungen nach der arabischen Handschriften der Bibliothèque Nationale*, Heidelberg 1912.
- Ruska 1924 = J. Ruska, *Arabischen Alchemisten. I. Chālid ibn Jazīd ibn Mu'āwija*, Heidelberg 1924, (Heidelberger Akten der von-Portheim-Stiftung, 6, Arbeiten aus dem Institut für Geschichte der Naturwissenschaft, 1).
- Ruska 1926 = J. Ruska, *Tabula Smaragdina, Ein Beitrag zur Geschichte der hermetischen Literatur*, Heidelberg 1926, (Heidelberger Akten der von-Portheim-Stiftung, 14, Arbeiten aus dem Institut für Geschichte der Naturwissenschaft, IV).
- Ruska 1929 = J. Ruska, «Zwei Bücher *De Compositione Alchemiae* und ihre Vorreden», *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 11 (1929), 28-37.
- Ruska 1930 = J. Ruska, «Die Vision des Arisleus», in *Historische Studien und Skizzen zu Natur- und Heilwissenschaft. Festgabe Georg Sticker*, Berlin 1930, 22-26.
- Ruska 1931 = J. Ruska, *Turba philosophorum: ein Beitrag zur Geschichte der Alchemie*, Berlin 1931, (Quellen und Studien zur Geschichte der Naturwissenschaften und der Medizin, 1).
- Ruska 1935a = J. Ruska, *Das Buch der Alaune und Salze, eine Grundwerk der spät-lateinischen Alchemie*, Berlin 1935.

- Ruska 1935b = J. Ruska, «Übersetzung und Bearbeitungen von al-Rāzīs Buch Geheimnis der Geheimnisse», *Quellen und Studien zur Geschichte der Naturwissenschaften und der Medizin*, 4 no. 3 (1935), 153-238.
- Ruska 1936a = J. Ruska, «Studien zu Muḥammad Ibn Umail al-Tamīmī's *Kitāb al-Mā' al-Waraqī wa'l-Ard an-Najmīyah*», *Isis*, 24 (1936), 310-42.
- Ruska 1936b = J. Ruska, «Studien zu den chemisch-technischen Rezeptsammlungen des *Liber Sacerdotum*», *Quellen und Studien zur Geschichte der Naturwissenschaften und der Medizin*, 5 no. 2/3 (1936), 83-125.
- Ruska 1937 = J. Ruska, «Al-Rāzīs Buch *Geheimnis der Geheimnisse*, mit Einleitung und Erläuterungen in deutscher Übersetzung», *Quellen und Studien zur Geschichte der Naturwissenschaften und der Medizin*, 6 (1937), 1-246.
- Ruska 1939 = J. Ruska, «Pseudepigraphie Rasis-Schriften», *Osiris*, 7 (1939), 31-94.
- Ryding 1994 = K. C. Ryding, «Islamic Alchemy According to Al-Khwarizmi», *Ambix*, 41 no. 3 (1994), 121-34.
- Sabeo 1525 = F. Sabeo (ed.), *Gebris Philosophi perspicacissimi Summa perfectionis magisterii in sua natura ex emendatissimi nuper edita cum quorundam Capitulorum, et Vasorum, et Fornacum, Omissorum in volumine alias mendosissime impresso*, Roma: Marcellus Silber, s.d. [1525].
- Sabeo 1542 = F. Sabeo, *Gebris Philosophi Perspicacissimi Summa Perfectionis magisterii in sua natura ex bibliothecae Vaticanae exemplari undecunque emendatissimo nuper edita, cum quorundam Capitulorum, Vasorum, et Fornacum, in volumine alias mendosissime impresso omissorum*, Venezia: Peter Schoeffer, 1542.
- Sayyid 2009 = Ibn al-Nadīm, *The Fihrist of Al-Nadīm, Abul-Faraj Muḥammad Ibn Ishāq, Composed at 377 AH*, ed. by A. F. Sayyid, London 2009.
- Schmitt & Ryan 1982 = C. B. Schmitt and W. F. Ryan (ed.), *Pseudo-Aristotle, the Secret of Secrets. Sources and Influences*, London 1982, (Warburg Institute Surveys and Texts, 9).
- Sezgin 1971 = F. Sezgin, *Geschichte des arabischen Schrifttums. Band IV (Alchimie - Chemie - Botanik - Agrikultur, bis ca. 430 H.)*, Leiden 1971.
- Shāhīn 1992 = 'Abd al-Razzāq al-Qāshānī, *Mu'jam iṣṭilāḥāt al-ṣūfiyya*, ed. by 'Abd al-'Al Shāhīn, Cairo 1992.
- Shams al-dīn 1999 = Ibn al-'Arabī, *Al-Futūḥāt al-Makkiyya*, ed. by A. Shams al-dīn, Beirut 1999, 9 vol.
- Singer 1946 = D. W. Singer, «Alchemical Texts Bearing the Name of Plato», *Ambix*, 2 (1946), 115-28.
- Smith & Hawthorne 1974 = C. S. Smith and J. G. Hawthorne, «*Mappae Clavicula*. A Little Key to the World of Medieval Techniques», *Transactions of the American Philosophical Society*, 64 no. 4 (1974), 1-128.
- Stapleton, Azo, & Hidāyat Ḥusain 1927 = H. E. Stapleton, R. F. Azo, and M. Hidāyat Ḥusain, «Chemistry in Irāq and Persia in the Tenth Century A. D.», *Memoirs of the Asiatic Society of Bengal*, 8 no. 6 (1927), 317-418.
- Stapleton et al. 1962 = H. E. Stapleton, R. F. Azo, M. Hidāyat Ḥusain, and G. L. Lewis, «Two Alchemical Treatises Attributed to Avicenna», *Ambix*, 10 (1962), 41-82.
- Stapleton, Hidāyat Ḥusain, & Turāb 'Alī 1933 = H. E. Stapleton, M. Hidāyat Ḥusain, and M. Turāb 'Alī, «Three Arabic Treatises on Alchemy by Muḥammad Bin Umayl (10th Century A. D.)», *Memoirs of the Asiatic Society of Bengal*, 12 no. 1 (1933), 1-213.
- Stavenhagen 1974 = L. Stavenhagen, *A Testament of Alchemy, Being the Revelations of Morienus, Ancient Adept and Hermit of Jerusalem to Khalid Ibn Yazid Ibn*

- Mu'awiyya, *King of the Arabs of the Divine Secrets of the Magisterium and Accomplishment of the Alchemical Art*, Edited and Translated, Hannover 1974.
- Steele 1920 = R. Bacon, *Opera hactenus inedita Rogeri Baconis*, vol. 5 (*Secretum secretorum cum glossis et notulis, tractatus brevis et utilis ad declarandum quedam obscure dicta Fratris Rogeri*), ed. by R. Steele, Oxford 1920.
- Steele 1929 = R. Steele, «Practical Chemistry in the Twelfth Century: *Rasis de aluminibus et salibus*», *Isis*, 12 (1929), 10-46.
- Steele & Singer 1928 = R. Steele and D. W. Singer, «The Emerald Tablet», *Proceedings of the Royal Society of Medicine*, 21 no. 3 (1928), 485-501.
- Steinschneider 1904-1905 = M. Steinschneider, *Die europäischen Übersetzungen aus dem Arabischen bis Mitte des 17. Jahrhunderts*, Wien 1904-1905, (Sitzungsberichte der Akademie der Wissenschaften in Wien, 149, 151).
- Steinschneider 1897 = M. Steinschneider, *Die arabischen Übersetzungen aus dem Griechischen*, Leipzig 1897.
- Suchier 1883 = H. Suchier, *Denkmäler provenzalischer Literatur und Sprache*, Halle 1883, 2 vol.
- Theatrum Chemicum* 1602-1661 = *Theatrum Chemicum*, Strasbourg: Lazare Zetzner and heirs, 1602-1661, 6 vol.
- Thillet 2000-2003 = P. Thillet, «Remarques sur le *Liber Quattorum* du pseudo-Platon (*Kitāb al-rawābī' li-Aflāṭūn*)», *Chrysopæia*, 7 (2000-2003), 81-119.
- Thillet 2005 = P. Thillet, «Remarques sur le *Liber Quattorum* du pseudo-Platon (*Kitāb al-rawābī' li-Aflāṭūn*)», in C. Viano (ed.), *L'alchimie et ses racines philosophiques: la tradition grecque et la tradition arabe*, Paris 2005, 201-32.
- Thorndike 1923-1958 = L. Thorndike, *A History of Magic and Experimental Science*, New York 1923-1958, 8 vol.
- Travaglia 2001 = P. Travaglia, *Una cosmologia ermetica, Il Kitāb sirr al-ḥālīqa / De secretis naturae*, Napoli 2001.
- Ullmann 1972 = M. Ullmann, *Die Natur- und Geheimwissenschaften im Islam*, Leiden 1972, (Handbuch der Orientalistik, erste Abteilung, Ergänzungsband VI zweiter Abschnitt).
- Ullmann 1978 = M. Ullmann, «Hālid ibn Yazīd und die Alchemie: Eine Legende», *Der Islam, Zeitschrift für Geschichte und Kultur des islamischen Orients*, 55 (1978), 181-218.
- Van Bladel 2004 = K. T. Van Bladel, «The Iranian Characteristics and Forged Greek Attributions in the Arabic *Sirr Al-Asrār* (Secret of Secrets)», *Mélanges de l'Université Saint-Joseph de Beyrouth*, 57 (2004), 151-72.
- van Vloten 1968 = Khwārizmī, *Liber Mafātīḥ al-'ulūm: explicans vocabula technica scientiarum tam Arabum quam peregrinorum*, ed. by G. van Vloten, 2nd ed. (1st ed. 1895), Leiden 1968.
- Weisser 1979 = Balīnūs, *Buch über das Geheimnis der Schöpfung und die Darstellung der Natur (Buch der Ursachen) von Pseudo-Apollonios von Tyana*, ed. by U. Weisser, Hālab (Alep) 1979, (Sources and Studies in the History of Arabic-Islamic Science, 1).
- Weisser 1980 = U. Weisser, *Das «Buch über das Geheimnis der Schöpfung» von Pseudo-Apollonios von Tyana*, Berlin 1980, (Ars medica: Texte und Untersuchungen zur Quellenkunde der alten Medizin, 2).
- Wellmann 1924 = M. Wellmann, «Aristoteles *De lapidibus*», *Sitzungsberichte der Preussischen Akademie der Wissenschaften: Philosophisch-historische Klasse*, 11 (1924), 79-82.

- Wielgus 1973 = S. Wielgus, «Quaestiones Nicolai Peripatetici», *Mediaevalia Philosophica Polonorum*, 17 (1973), 57-155.
Williams 2003 = S. J. Williams, *The Secret of Secrets: The Scholarly Career of a Pseudo-Aristotelian Text in the Latin Middle Ages*, Ann Arbor 2003.
Wyckoff 1967 = Albert the Great, *Book of Minerals*, transl. by D. Wyckoff, Oxford 1967.

ABSTRACT

Sébastien Moureau, *Min al-Kīmiyā' ad Alchimiam. The Transmission of Alchemy from the Arab-Muslim world to the Latin West in the Middle Ages*

This article is the first study entirely dedicated to the transmission of alchemy from the Arab-Muslim world to the Latin West in the Middle Ages. Its first part is an analysis of the concept of alchemy in the Arabic tradition and in the Latin literature of the twelfth and thirteenth centuries in order to stress the elements of doctrine that passed from one cultural area to the other. The second part of this article is a commented list of the alchemical Latin texts that are, could be, or pretend to be translations from the Arabic. The article also presents some new discoveries among which two are of special importance: the identification by the author of the Arabic original of the *Liber ad filium suum* of Alphidius (Asfidiyūs), and the identification by Marion Dapsens and the author of the Arabic original of a short Latin text attributed to Prince Khālīd b. Yazīd.

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