



HAL
open science

The First Private and Public Courses of Chymistry in Paris (and Italy) from Jean Beguin to William Davisson

Didier Kahn

► **To cite this version:**

Didier Kahn. The First Private and Public Courses of Chymistry in Paris (and Italy) from Jean Beguin to William Davisson. *Ambix*, 2021, 68 (2-3), pp.247-272. <10.1080/00026980.2021.1922019>. <hal-03280382>

HAL Id: hal-03280382

<https://hal.sorbonne-universite.fr/hal-03280382v1>

Submitted on 7 Jul 2021

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



HAL Authorization

The First Private and Public Courses of Chymistry in Paris (and Italy) from Jean Beguin to William Davisson

Didier Kahn

CNRS, Cellf 16–18, Paris, Sorbonne Université, France

This article provides a detailed, accurate overview of the private, and first public courses of chymistry in Paris. After contextualising the lectures of Beguin, I discuss the teaching of Étienne de Clave. This leads to Italy where his brother, Jacques, himself a chymist and physician, became the first in Italy to receive the official title of professor of chymistry. I explore new documents concerning Étienne de Clave's chymical teaching, and then focus on the courses at the *Jardin Royal* under both Guy de La Brosse and William Davisson, along with further private courses in Paris between 1630 and 1650. Beginning with those of Davisson before he was appointed professor of chymistry at the Royal Garden – a title even La Brosse did not receive – I proceed thereafter with the examination of the courses of Barlet and Le Febvre.

Preliminary remarks

As recent scholarship has shown, transmutation was often discussed, within courses of philosophy, within Faculties of arts at universities in the Middle Ages and, increasingly, in the Early Modern era. During that time alchemy was evoked not only in commentaries on Aristotle's *Meteorology*, but also as part of “general physics”.¹ One of the foremost contexts of these discussions was the question whether art could imitate nature, or even surpass it. Furthermore, beyond the question of metallic transmutation, another question with huge implications was raised mostly by Paracelsianism: the possibility of artificial life and the making of a homunculus.² It was often evoked by prominent academic personalities such as

¹ Christoph Meinel, “Die Chemie an den Universitäten des 18. Jahrhunderts – Institutionalisierungsstufen und konzeptioneller Wandel,” *Academiae Analecta. Mededelingen van de Koninklijke Academie voor Wetenschappen, Letteren en Schone Kunsten van België. Klasse der Wetenschappen* 48 (1986): 35–57 (on 39 and 41); Craig Martin, “Alchemy and the Renaissance Commentary Tradition on *Meteorologica* IV,” *Ambix* 51 (2004): 245–62; Sylvain Matton, *Scolastique et alchimie (XVI^e–XVII^e siècles)* (Paris–Mailand: SEHA–Archè, 2009), 855–56. For the Middle Ages and early 16th century, see also (among others) Chiara Crisciani, “La *Quaestio de Alchimia* fra Duecento e Trecento,” *Medioevo* 2 (1976): 119–68; Constantine of Pisa, *The Book of the Secrets of Alchemy*, ed. Barbara Obrist (Leiden: Brill, 1990); William R. Newman, *Promethean Ambitions. Alchemy and the Quest to Perfect Nature* (Chicago–London: University of Chicago Press, 2004), esp. 43–107; Paola Zambelli, “Pomponazzi sull'alchimia: da Ermete a Paracelso?,” in *Studi filologici e letterari in memoria di D. Aguzzi-Barbagli*, ed. Daniela Boccassini (Stony Brook, NY: Forum Italicum, 1997), 100–22.

² Here and below I am merely paraphrasing Matton, *Scolastique et alchimie*, 855–57.

Gregorio de Valencia (1591), Martin Del Rio (1599), Celestino Sfondrati (1696) or Jean Du Hamel (1705). Thus, the *quaestio de alchimia* became, from the last quarter of the sixteenth to the middle of the eighteenth century, a distinctive feature of university teaching, while those same questions posed by alchemy were rarely discussed in vernacular textbooks of philosophy, intended mostly for upper class readers. This context should not be overlooked whenever relationships between alchemy and universities come under discussion.

Besides the Faculties of arts, alchemy, or rather medical chymistry, was occasionally discussed in Faculties of medicine before 1560, mostly in formal disputations and doctoral defences. In the case of Paris, Jean Dupèbe has highlighted the interest of Jacob Sylvius (Jacques Dubois, 1478–1555), a famous teacher at the medical Faculty, in oils and quintessences extracted from natural substances, and has hinted at the “practice of chymical medicine” in Paris “as early as the first half of the sixteenth century, and the controversies probably raised by this practice.” Sylvius had read Augurelli and Ulstad and criticised his colleagues’ scepticism concerning alchemical medicine.³ Later in the sixteenth century, prohibitions of Paracelsianism were often the response of Faculties of medicine to the internal threat of Paracelsian contagion among their members, as evidenced in the case of the Parisian attacks against Roch Le Baillif (1578), Joseph Du Chesne, and Théodore Turquet de Mayerne (1603–1608).⁴

Other institutional contexts in which chymistry was discussed, and even taught, were botanical gardens, especially in Italy and in Paris. And we can also find non-institutional courses of chymistry, such as those taught, in France, by Jean Beguin. There alchemy was discussed on both a theoretical and practical level.

My focus will be on these private, or semi-public, non-institutional courses of chymistry in Paris from Jean Beguin to the fully official institutionalisation of such courses in the Jardin Royal des Plantes in Paris in 1647. The path will unexpectedly lead us to Italy as well.⁵ Paris was certainly not the only relevant place in France for these sorts of courses; other French cities also deserve careful, further study.

³ Jean Dupèbe, *Astrologie, religion et médecine à Paris: Antoine Mizauld (c. 1512–1578)*, Ph.D. Diss. (Université de Paris X-Nanterre, 1998), vol. III, 144–48; *Prosateurs latins en France au XVI^e siècle*, ed. Stephen Bamforth, Guy Bédouelle, Jacques Chomarat *et alii* (Paris: Presses de l’Université de Paris-Sorbonne, 1987), 600–11.

⁴ Didier Kahn, *Alchimie et paracelsisme en France à la fin de la Renaissance* (Geneva: Droz, 2007), 281 and 369–71.

⁵ I will try to offer some new perspectives on this topic already abundantly treated – notably by Antonio Clericuzio, “Teaching Chemistry and Chemical Textbooks in France. From Beguin to Lemery,” *Science & Education* 15 (2006): 335–55; “‘Sooty Empiricks’ and Natural Philosophers: The Status of Chemistry in the Seventeenth Century,” *Science in Context* 23 (2010): 329–50, and the references to Italy listed below, n. 54. For rich insights into the 18th century, see John Perkins, “Creating Chemistry in Provincial France before the Revolution: The examples of Nancy and Metz,” *Ambix* 50 (2003): 145–81 and 51 (2004): 43–75; Bernadette Bensaude-Vincent and Christine Lehman, “Public Lectures of Chemistry in Mid-Eighteenth-Century France,” in *New Narratives in Eighteenth-Century Chemistry*, ed. Lawrence M. Principe (Dordrecht: Springer, 2007), 77–96.

Jean Beguin (before 1570–1618?)

It is well known that the teaching of chymistry in France really begins with Jean Beguin. The context behind this teaching should help clarify its motivations.

Before Beguin, we only know of one other non-institutional location where chymistry might have been taught: the private academy of Jacques Gohory (1520–1576), who named it his “*Lycium philosophal*.”⁶ Unknown, however, is the extent to which Gohory taught anything there, or whether he simply worked in his laboratory in the company of selected friends. For that reason, it is safer not to consider Gohory as a possible forerunner of Beguin. Nevertheless, prior to Beguin, several people from the Parisian medical world at the turn of the seventeenth century deserve our attention. These are Pierre Paulmier, a member of the Faculty of medicine, and three royal physicians: Joseph Du Chesne, Turquet de Mayerne, and Ribit de La Rivière. Pierre Paulmier (1568–1610) received his doctorate in the Parisian Faculty of medicine in 1596.⁷ He began at once to give lectures on pharmacy. In 1597, however, he got into trouble for teaching doctrines “alien to those of Hippocrates and Galen and the dignity of the Faculty”⁸. It is difficult not to identify these teachings with lectures on chymical pharmacy, since a few years later, in 1603, Paulmier openly praised Joseph Du Chesne and spagyric remedies before the Faculty – and was quickly compelled to retract.⁹ Thus we have no conclusive evidence, but strong suspicions that Pierre Paulmier’s lectures on pharmacy in 1597 might have been the very first lectures on chymistry in Paris.

If Paulmier was the first, he was not the only physician to deliver lectures in pharmacy in Paris at the time. Théodore Turquet de Mayerne (1573–1655), who arrived in Paris in 1597, lectured to young surgeons in anatomy and to apothecaries in pharmacy. As a consequence, he attracted both the wrath of the Medical Faculty of Paris and the attention of the first physician to the King, Jean Ribit de La Rivière (*ca.* 1546–1605). Being already a convinced Paracelsian, Mayerne must have taught chymical, as well as standard Galenic pharmacy, contrary to his own statement that he merely lectured on the doctrines of Mesue (*Pharmacopœis publice Mesuei dogmata interpretari*).¹⁰ These lectures were apparently given

⁶ Gohory is often mentioned as a forerunner of Beguin. On the *Lycium philosophal*, see Didier Kahn, *Paracelsisme et alchimie en France à la fin de la Renaissance*, Ph.D. Diss. (Université de Paris IV, 1998), Part II, chap. 2. See also Rosanna Gorriss Camos, “De l’hysope à la rose: du *Lycium Philosophal* de Jacques Gohory au Salon vert de la Maréchale de Retz,” in *Les Académies dans l’Europe humaniste: idéaux et pratiques*, ed. Marc Deramaix *et al.* (Geneva: Droz, 2008), 549–90 (on 553–64). The case of Nicolas Houël (evoked by Bensaude-Vincent and Lehman) is unclear and deserves further study.

⁷ On Paulmier, see Adeline Gasnier, “Un exemple de débat interne à la faculté de médecine de Paris,” *Seizième Siècle* 8 (2012): 107–26; *eadem*, “Riolan, savant en alchimie?,” *Revue d’histoire des sciences* 66 (2013): 199–211.

⁸ Kahn, *Alchimie et paracelsisme*, 368; Gasnier, “Un exemple de débat interne,” 108; Gasnier, “Riolan, savant en alchimie?,” 202 n. 13: “[...] quod propositiones ab Hippocratis et Galeni doctrina, et huius scholis dignitate alienas pharmacopœis dictaverit et excutiendas proposuerit.”

⁹ Kahn, *Alchimie et paracelsisme*, 369–71.

¹⁰ Kahn, *Alchimie et paracelsisme*, 360–61.

shortly after Mayerne's arrival in Paris and lasted until the Faculty forbade him to practice medicine in Paris at the end of 1603.

Mayerne was already acquainted with Joseph Du Chesne (1546–1609), himself physician to the King since 1591. Together with Ribit de La Rivière, they made quite the team.¹¹ Their constant concern was to have duly instructed apothecaries capable of preparing reliable chymical remedies, thus relieving them from this time-consuming task. This probably explains why Ribit de La Rivière, between 1598 and 1601, repeatedly tried to obtain, as the King's first physician, the right to confer masters degrees in surgery and pharmacy – but to no avail.¹² Given the opposition of the Faculty to any official courses in chymistry, Ribit, Du Chesne, and Mayerne were left with only one possible alternative: committing a trusted collaborator to give lectures on chymistry, someone who was outside the sphere (and the grasp) of the medical Faculty. Here enters Jean Beguin (before 1570–1618?).

We know almost nothing of Beguin's life before his first publications (1608). Born in Lorraine before 1570,¹³ Beguin seems to have spent some years in Germany and Central Europe before coming to Paris.¹⁴ He probably met the apothecary of the Duke of Bullion, Nicolas Bonne (a man skilled in chymical preparations) in Sedan before arriving in Paris. He praised Bonne's expertise in his *Tyrocinium chymicum* in 1612, as did Jeremias Barth, Beguin's pupil, in 1618.¹⁵ I have been unable to trace more evidence of this connection, but we should keep in mind that Ribit de La Rivière was physician to the Duke of Bullion from

¹¹ Ribit became first physician in 1594; Du Chesne was appointed physician in ordinary in 1591, but resided in Paris since 1596 only; Mayerne was appointed in the first months of 1599. See Kahn, *Alchimie et paracelsisme*, 358–62; Charles Du Bois-Melly, "L'affaire Juranville, 1595–1596," *Bulletin de l'Institut national genevois* 29 (1889): 151–84 (on 179–80); Hugh Trevor-Roper, *Europe's physician. The various life of Sir Theodore de Mayerne* (New Haven-London: Yale University Press, 2006), 21 and 384 n. 27.

¹² Kahn, *Alchimie et paracelsisme*, 368.

¹³ T. S. Patterson, "Jean Beguin and his *Tyrocinium chymicum*," *Annals of Science* 2 (1937): 243–98 (on 244, §5), thought "reasonable" to situate Beguin's birth "about the middle of the sixteenth century." Patterson based his assumption on these lines by Jean Beguin, *Tyrocinium Chymicum* (Paris: Mathieu Le Maistre, 1612), sig. [Av]r–v: "Et licet ipse Medicus non sum: nec medicinam exerceam: tamen quia nunc a tot annis, remedia in usum Medicorum præparo: experientia didici: raro felicem remedia sortita esse effectum: ubi solummodo vel Chymica; vel Galenica adhibita fuerunt: felicissimum autem, ubi Galenicis interdum ad leges Therapeiæ, chymica fuerunt intermixta." The words *tot annis* can mean either 15, 20 or 30 years...

¹⁴ Patterson, "Jean Beguin," 245, referring to Beguin's discourse "Au lecteur" in the French translation of his *Tyrocinium*: Jean Beguin, *Les Elemens de Chymie* (Paris: Mathieu Le Maistre, 1615), sig. ã3r–v. I give the intricate French text rather than Patterson's smooth English translation: "[...] ayant esté plus sensiblement retenu, et arrêté d'un puissant lien de respect et d'amitié en France, lors que j'estois sur mon depart pour aller chercher dans une vie tranquille le repos qu'autrefois j'avoys trouvé en la Germanie: j'ay changé mes desseings, et pareillement mon stil que le long sejour que j'avoys fait és nations diverses m'avoit obligé de prendre preferant le langage plus universel [i.e. Latin] au nostre plus particulier [i.e. French]."

¹⁵ Patterson, "Jean Beguin," §28, translating Beguin, *Tyrocinium*, ed. 1612, 21–22: "Non est igitur: quod Medici docti & prudentes a Chymicorum medicamentorum usu in posterum absteineant, cum si ea ab expertis artistis, inter quos in Gallia eminent Nicolaus Bonne Illustrissimi Ducis Bullionæi in Arce Sedanensi Pharmacopœus, qui officinam habet selectissimis remediis, cum Galenicis, tum spagyricis, præsertim vero Theriacis communi & essensificata ad Quercetani leges solertissime & fidelissime præparatis instructissimam, conficiantur: omnis malignitas, si quæ ipsis sua natura inest, ministerio Vulcani auferatur [...]." See also Patterson, "Jean Beguin," §103, translating Jean Beguin, *Secreta Spagyrica Revelata, sive Tyrocinium Chymicum, ultimo recognitum*, ed. Jeremias Barth (n. pl. [Frankfurt/Oder]: Johannes Eichhorn, 1618), sig. [Aviii]r.

1589 to 1594.¹⁶ While solid evidence is still lacking, there are grounds, nevertheless, to suspect that some chymical teaching took place at the Protestant Academy of Sedan at the turn of the seventeenth century, and even later, in the 1620s, this time by none other than Théodore Turquet de Mayerne.¹⁷

The view persists that it was Ribit, along with Mayerne, who helped Beguin obtain permission to have a laboratory and give public lectures in chymistry in Paris.¹⁸ Ribit de La Rivière died in 1605, however, and it is mere speculation to assume that Beguin began teaching during Ribit's lifetime. By 1605 the war between Du Chesne, Mayerne and the Faculty of medicine of Paris was raging; however, no mention of lectures in chymistry are anywhere to be found among the numerous pamphlets issued by all parties involved in this conflict. The Faculty of Medicine, however, would have been all too happy to thunder and take legal action against such lectures. The most likely course of events would rather be that Beguin's teaching began after this conflict, around the time of his first public expression, i.e. when he edited Michael Sendivogius's *Novum Lumen Chemicum* in 1608. In January 1608, King Henry IV forced the Faculty of medicine to reconcile with his Paracelsian physicians, Du Chesne and Mayerne, who, in turn, promised to stop practicing Paracelsian medicine (which, of course, they did not).¹⁹ It seems likely that Beguin's teaching began at this time. In fact, Beguin's name appeared on his 1608 edition of Sendivogius – and already elsewhere in November 1607 – with the title of chaplain to the King.²⁰ Thus he benefited from a form of royal patronage, which shielded him from the wrath of the Faculty of medicine. Thus, I suggest, we should date Beguin's first lectures to the end of 1607 or to the beginning of 1608, and see them as part of two wider contexts: the need of Mayerne and Du Chesne to rely on

¹⁶ Hugh Trevor-Roper, "The Sieur de la Rivière, Paracelsian Physician of Henri IV" (1972), revised version, in Hugh Trevor-Roper, *Renaissance Essays* (London: Secker & Warburg, 1985), 200–22.

¹⁷ Mayerne's lectures on chymistry in Sedan are mentioned by Pierre Congar, "Les caractères propres de l'Académie protestante de Sedan (1602–1681)," in *Histoire de l'enseignement de 1610 à nos jours. Actes du 95^e Congrès national des sociétés savantes (Reims, 1970), Section d'histoire moderne et contemporaine, tome I* (Paris: Bibliothèque Nationale, 1974), 537–49 (on 542), without a precise reference. Further research is needed. Mayerne was in Sedan in January 1622, as we learn from one of his manuscripts (London, British Libr., MS Sloane 2083, fol. 1r): "Ex ipsius Trogny αὐτογραφοῦ mihi dato Sedani, & in mei gratiam ab ipso authore conscripto. Januar. 1622." See also Trevor-Roper, *Europe's Physician*, 249–54.

¹⁸ See e.g. Clericuzio, "Teaching Chemistry," 340. This statement goes back to Nicolas Gobet, *Les Anciens minéralogistes du Royaume de France* (Paris: Ruault, 1779), vol. I, p. 48. Gobet relied on the papers of the physician Jacques-François de Villiers (1727–1794), author of the entry "Fourneau" (among others) in Diderot and D'Alembert's *Encyclopédie*. Villiers seems to have been in possession of Beguin's papers – which, however, seem now lost. On Villiers, see Christine Lehman and François Pépin, "La Chimie et l'*Encyclopédie*: introduction," *Corpus* 56 (2009): *La chimie et l'Encyclopédie*, 5–36.

¹⁹ Kahn, *Alchimie et paracelsisme*, 389–92.

²⁰ See the praise of Jacob Alstein by Beguin in the *Elogia ac judicia doctorum nostri seculi hominum de Jacobo Alsteinio* (Prague: Schuman, 1617), [p. 23], dated from Paris, 12 November 1607. On Beguin as editor of Sendivogius, see Didier Kahn, "King Henry IV, Alchemy, and Paracelsianism in France (1589–1610)," in *Chymists and Chymistry. Studies in the History of Alchemy and Early Modern Chemistry*, ed. Lawrence M. Principe (Sagamore Beach: Watson Publishing, 2007), 1–11.

chymically trained apothecaries, and the agreement imposed by the King on the medical Faculty to end its war against his own Paracelsian physicians.

According to Beguin himself, however, the lectures were first given “at the request of some medical students, and the persuasion of [his] friends”.²¹ This statement published in 1612 was perhaps an edited version of the truth. The tense context of the opposition of the medical Faculty to chymical medicine, still present in 1612,²² along with political considerations that we can only speculate about, may have prevented Beguin from mentioning the late King in his explanations. Beguin’s statement was perhaps only part of the truth, and this is as much as present evidence allows us to deduce. The purpose of the lectures as explained by Beguin in 1612 – and more clearly by his former pupil, the Silesian Jeremias Barth (1580–1639), in 1618 – was mainly to disclose the excellent remedies of the “Hermetic medicine” as openly as possible, notably those too obscurely described by Joseph Du Chesne.²³

As we know, many practical teachings were borrowed by Beguin from the *Alchemia* of Andreas Libavius (1597).²⁴ The theoretical part, however, was clearly derived from Joseph Du Chesne’s writings.²⁵ Beguin presents the reader with the theory of the *tria prima* as active principles resulting from the distillation of any substance, but he also mentions two other, passive bodies resulting from the same distillation, namely “phlegm” and earth, deprived of any Hippocratical virtue. “Phlegm” and earth are not *elements* (they are not the standard elements of water and earth): Beguin mentions them as mere “bodies” (*duo alia corpora*) which are the *tria prima*’s clothes, or containers (*quasi integumenta*). Du Chesne, in *Ad*

²¹ Patterson, “Jean Beguin,” 252, §18, translating Beguin, *Tyrocinium*, ed. 1612, To the reader, sig. ãij recto: “Cum superioribus annis, rogatu quorundam medicorum, nec non suasu meorum intimorum, in hac inclyta urbe Lutetia, ludum chymicum erexissem: quo artis Hermeticæ amantes, in ipsis manualibus operationibus exercerentur: non tantum ipsis grave et molestum fuit, præparationum descriptiones calamo excipere; verum mihi etiam longe tædiosissimum, eas dictare [...]”

²² Beguin evoked in 1612 some problems with physicians he labelled as “misochemists,” a term evidently pointing at physicians from the medical Faculty of Paris (Patterson, “Jean Beguin,” 253–54) – although Beguin adopted a clear conciliationist attitude: “Quin contra ita sentio: neminem unquam magnum futurum Medicum: cui Galenus & Hippocrates non fuerint magni.” (ed. 1612, “To the Reader,” sig. ã5r).

²³ Patterson, “Jean Beguin,” 252, § 19; 253, § 20; 285, § 101–102. Barth is acknowledged by Beguin as the instigator of the 1612 edition of the *Tyrocinium* in his letter to Barth from January 28, 1614, published by Barth in 1618 and quoted by Patterson, “Jean Beguin,” 274, §77. Barth himself declares it in his preface to the same edition (quoted by Patterson, “Jean Beguin,” 286, § 104–105). The dates of Barth are found in Johann Heinrich Cunrad, *Silesia togata* (Liegnitz: Rorlach, 1706), 11.

²⁴ Andrew Kent and Owen Hannaway, “Some new considerations on Beguin and Libavius,” *Annals of Science* 16 (1960): 241–50. On Beguin’s *Tyrocinium*, see also the analysis by Bernard Joly, *Descartes et la chimie* (Paris: Vrin, 2011), 26–27.

²⁵ Beguin, *Tyrocinium*, end of chap. II, ed. 1612, 31–32: “praeter priora tria commemorata principia vere activa, duo alia resultent corpora, quae principiorum numero a Chymicis non adscribuntur: quod illorum tantum sint quasi integumenta, omnique ὀνύμει Hippocratica destituta: quorum alterum siccum, Terra arenosa est, sive cinis elotus, vocaturque Terra damnata et Caput mortuum, nulla vi alia praeditum, nisi siccante et emplastica, quodque facili negotio in vitrum abit: alterum humidum et accidentaliter aëreum, nempe phlegma insipidum et inodorum, quodque tantum humectat, citra ullam ἐνέργειαν aut activitatem medicam.” Cf. Joseph Du Chesne, *Ad Veritatem Hermeticae Medicinae*, chap. XIV (Frankfurt: Wolfgang Richter for Konrad Neben, 1605), esp. 132.

Veritatem Hermeticæ Medicinæ, had built a far more complex matter theory, using that recently elaborated by the German Paracelsian Helisæus Röslin.²⁶ Beguin, however, obviously preferred to stick to an easier, more simple theory: every natural body was made up of, and could be resolved in three active principles: the *tria prima*, and two other, passive, bodies containing them: water and earth. This was not a theory of five principles, or five elements and principles. Whereas Du Chesne still considered water and earth as elements, Beguin did not call them “elements”, but only “bodies”. Thus, he clearly favored the standard *tria prima* theory over Du Chesne’s more sophisticated ideas.

In addition, Beguin was very careful not to reject standard scholastic and medical teachings. Just as Aristotle had assigned three principles to physical bodies, namely matter, form, and privation (although those are more cognitive than practical, Beguin added); and just as Galen had established four elements as the principles (albeit remote ones) of physical bodies, so the chymist, as an *artifex sensatus* (a craftsman heeding what his five senses convey to him), accepts that there are three sensible, proximate principles of all sensible bodies, namely mercury, sulphur and salt.²⁷ This strategy was close to that used by Du Chesne in 1603 when he tried to establish Hermetic medicine as the fourth medical sect after the Empirics, Methodics and Dogmatics.²⁸ Here Beguin sought to establish medical chymistry as a third legitimate method of investigating natural bodies, besides Aristotle’s physics and Galen’s medicine. This third method was both more practical, he argued, and closer to the physical composition of natural things. A bold claim – which is not, however, substantiated by any further arguments in the *Tyrocinium*.

Who exactly attended Beguin’s lectures? The only information we have comes from Jeremias Barth in his 1618 edition of Beguin’s textbook. There he lists not only medical students, but even the old nobility and the *noblesse de robe*, along with some doctors (probably physicians from the Parisian Faculty), all of them being attracted by such a novelty.²⁹ This statement was certainly aimed at praising Beguin’s teaching and was probably quite enthusiastic. The account is, however, altogether plausible.

²⁶ See Didier Kahn, “Helisæus Röslin, Joseph Du Chesne et la doctrine des cinq éléments et principes,” in *Nouveau ciel, nouvelle terre. La révolution copernicienne dans l’Allemagne de la Réforme (1530–1630)*, ed. Miguel Ángel Granada and Edouard Mehl (Paris: Les Belles Lettres, 2009), 339–54.

²⁷ Beguin, *Tyrocinium*, ed. 1612, 26: “Sicut Aristoteles principia corporis naturalis vere statuit tria: Materiam, Formam & Privationem: licet ea sint noëtica potius, quam vere hypostatica: Et veluti Galenus quatuor elementa, ignem, aerem, aquam, terram, pro principiis, etsi remotis, haud abs re adstruit: ita Chymicus, artifex sensatus, sensibilibus corporum tria assertit principia sensibilia & proxima, Mercurium, sulphur & sal [...].”

²⁸ Kahn, *Alchimie et paracelsisme*, 364–66.

²⁹ Patterson, “Jean Beguin,” 285, § 102, quoting Barth’s preface to Beguin, *Secreta spagyrica revelata*, sig. [A7]r: “Nam & Principes, Comites, Nobiles, Consiliarii, Doctores, novitate hujus Professionis allecti, officinam ejus Chymicam interdum frequentabant.”

Beguin, I contend, began teaching in, or shortly before, 1608. By doing so he probably indulged the request of some medical students, and met Du Chesne's and Mayerne's need to prepare and make use of competent, chymically trained apothecaries. He also sought to popularise Du Chesne's remedies by clarifying their recipes. His matter theory rested on the Paracelsian *tria prima*, which he presented as enclosed within two passive bodies (*not* elements): water and earth. He took great care not to utterly reject Galen and Aristotle, and tried instead to show how his chymical matter theory complemented theirs.

We do not know when exactly Beguin died. It must have been in 1618 or shortly before: Patterson's arguments in favour of this date are very convincing, despite his own doubts.³⁰ Whether anybody continued Beguin's teaching is unknown.

Étienne de Clave (after 1580–ca. 1645)³¹

At the end of 1624, Jean-Baptiste Morin published a refutation of the fourteen theses of Antoine de Villon and Étienne de Clave directed against Aristotle's hylomorphism and recent neoplatonic doctrines of the world soul (possibly those of Robert Fludd or Jean d'Espagnet).³² The theses sought to establish that all natural bodies (except human beings) were composed of five chymical principles which were ungenerable and incorruptible, and could be considered as atoms. Their different combinations produced the diversity of all natural things. The five principles, described in the fifth thesis as "the true and only natural principles", were earth and water, salt, sulphur and mercury. This was quite a different doctrine from that of Beguin, for all five substances were *equally* considered as "principles", even if each was endowed with more or less active properties. De Clave's anti-Aristotelian attitude was also entirely different from Beguin's conciliatory position.

In his refutation of these theses, Jean-Baptiste Morin began by evoking the circumstances around them. After introducing Antoine de Villon, who seems to have been his personal enemy, Morin introduced Étienne de Clave with these words: "a man named de Claves, a physician who publicly professed chymistry" (*un nommé de Claves, Medecin, qui faisoit*

³⁰ Patterson, "Jean Beguin," 288, § 108 and 110.

³¹ In 1642 Christoph Schelhammer wrote from Paris to Joachim Jungius that Étienne de Clave still lived in Brittany, aged around 55, implying that de Clave was born around 1587. See Robert C. B. Avé-Lallemant, *Des Dr. Joachim Jungius aus Lübeck Briefwechsel* (Lübeck: Friedrich Aschenfeldt, 1863), 188 (quoted below, n. 86). However de Clave, in the dedication of his *Paradoxes* (1535), evoked his "studies and meditations since thirty-five years," implying that he worked on minerals since at least 1600 (see below, n. 36). Did he begin these studies as a thirteen-years old? It seems safer to place his birth in the early 1580s. For the date of his death, see below, on 19.

³² For a detailed account of this case, see Kahn, *Alchimie et paracelsisme*, 500–67. For other views on the significance of the case and an English translation of the fourteen theses, see Daniel Garber, "Defending Aristotle / Defending Society in Early 17th Century Paris," in *Wissensideale und Wissenskulturen in der frühen Neuzeit / Ideals and Cultures of Knowledge in Early Modern Europe*, ed. Wolfgang Detel and Claus Zittel (Berlin: Akademie Verlag, 2002), 135–60.

profession publique de Chymie).³³ The meaning might be that de Clave was already teaching chymistry before August 1624 (when the theses were publicly posted in Paris). Actually, the way in which de Clave intended to defend the fourteen theses is interesting. Using both reasonings and experiments, he promised to “expose Diana nude” free of charge “and Nature itself cleansed of its shades or impurities.” This task would be performed through a public chymical reduction of mixed bodies to their ultimate principles, being done every day 7–9 a.m. and 4–7 p.m. so as to have the whole curriculum covered within three weeks.³⁴

A further indication of de Clave’s possible regular teaching is given by Guy de La Brosse in 1628. La Brosse refers to the former pupils of Beguin as “the people who followed the chymical teaching of Beguin, or followed that of those who undertook the same task after him.”³⁵ Here we have proof that chymical courses were actually resumed after Beguin’s death; and the only candidate we know of is Étienne de Clave, who had been working on minerals since at least 1600³⁶ and moreover mentioned in the preface to his *Paradoxes* that he had already delivered twenty-five chymical courses in Paris.³⁷ The *Paradoxes* appeared in 1635, but were approved by the Sorbonne as early as 1631.³⁸ The undated preface could have been written at any time in between. Twenty-five courses are certainly not to be equated with twenty-five years. While we have no means of translating this statement into a reliable dating,

³³ Kahn, *Alchimie et paracelsisme*, 505. On Étienne de Clave, see Bernard Joly, “La théorie des cinq éléments d’Étienne de Clave dans la *Nouvelle Lumière Philosophique*,” *Corpus* 39 (2001): 9–44; Hiro Hirai, “Les *Paradoxes* d’Étienne de Clave et le concept de semence dans sa minéralogie,” *Corpus* 39 (2001): 45–71; Rémi Franckowiak, “Le *Cours de Chimie* d’Étienne de Clave,” *Corpus* 39 (2001): 73–99; Bernard Joly, “Clave, Étienne de,” in *Dictionnaire des philosophes français du XVII^e siècle*, ed. Luc Foisneau (Paris: Classiques Garnier, 2015), 427–29; Joly, *Descartes et la chimie*, 31–34.

³⁴ Kahn, *Alchimie et paracelsisme*, 521 and 522 (see also 505). See the Latin text in Didier Kahn, “La condamnation des thèses d’Antoine de Villon et Étienne de Clave,” *Revue d’histoire des sciences* 55 (2002): 143–98, on 172: “[Stephanus de Clave] nudam sine veste Dianam ipsamque naturam umbraculis seu impuritatibus detectam gratis & absque ulla spe lucri rationibus & experientia se demonstraturum pollicetur.

³⁵ Guy de La Brosse, *De la nature, vertu & utilité des plantes* (Paris: Rollin Baragnès, 1628), “Argument du troisieme livre,” after 288: “Ceux [...] qui auront fait un cours Chimique en poste sous Beguin, ou sous ceux qui ont entrepris la besongne apres luy: Diront que je donne un autre visage à la Chimie [...]” On this book, see Didier Kahn, “Plantes et médecine, (al)chimie et libertinisme chez Guy de la Brosse,” online on the database Medic@ (www.biusante.parisdescartes.fr/histoire/medica/presentations/brosse.php, April 2007, accessed 24 September 2020). On La Brosse, see Didier Kahn, “Quelques notes d’alchimie et d’histoire des sciences à propos des romans de Cyrano de Bergerac,” in *Lectures de Cyrano de Bergerac, Les États et Empires de la Lune et du Soleil*, ed. Bérengère Parmentier (Rennes: Presses Universitaires de Rennes, 2004), 59–76 (on 74–76).

³⁶ Étienne de Clave, *Paradoxes, ou Traitez philosophiques des pierres et pierreries, contre l’opinion vulgaire* (Paris: Veuve de Pierre Chevallier, 1635), dedication letter, sig. [ãiiij]r: “mes veilles, et mes meditations depuis trente-cinq ans”; “Au Lecteur,” sig. ãij r: “Auquel [i.e. the mineral kingdom] m’estant diligemment exercé depuis trente ans en ça [...]” The Privilege was obtained by de Clave in August 1634. De Clave transferred it to the printer three months later, in November. The dedication letter could have been written either in 1634 (or even 1631: see below, n. 38), or at the last minute, early in 1635.

³⁷ De Clave, *Paradoxes*, 200: “[...] en vingt-cinq cours de Chymie que j’ay enseigné en la fameuse ville de Paris, qui m’ont excité l’envie de plusieurs de ma profession” (i.e. physicians: de Clave probably meant doctors from the medical Faculty). Even if Ole Worm did refer to de Clave (which is not quite certain) in 1617 when he mentioned “a certain Claveria” when remembering skilled chymists in Paris besides Beguin, it does not mean that this “Claveria” was *teaching* chymistry, as Joly assumed in “La théorie des cinq éléments,” 16. Ole Worm had left Paris in 1613. Accordingly, Joly suggested that de Clave might have been teaching as early as 1613. Could he really have, proving himself a competitor to Beguin? On the contrary, the earliest version (in Latin) of his *Cours de Chimie* is filled with references to Beguin, considered by him a worthy forerunner, just like Oswald Croll. See below, on 18.

³⁸ De Clave, *Paradoxes*, “Approbation” (not paginated), dated by the Sorbonne doctors from Rouen, 1 March 1631.

the fact of these courses remains, whether de Clave began teaching before or after 1624. Furthermore, de Clave was publicly performing palingenesis experiments around 1624,³⁹ and the public library of Rennes (Brittany) preserves a manuscript written in 1630 of a chymical course taught by de Clave himself.⁴⁰ Why La Brosse's statement remained vague instead of plainly naming de Clave may perhaps be explained by the condemnation of the latter after the affair of the fourteen theses – unless our hypothesis is inaccurate, which is of course perfectly possible.

De Clave was to defend his fourteen theses publicly in August 1624, but the defense was forbidden by the first President of the Parliament of Paris. The decision, presumably, came at the request of the rector of the University, who did not want Aristotle's authority to be publicly challenged when he struggled, at the same time, to prevent the Jesuits from obtaining the right of conferring academic degrees in their colleges. The Jesuits would have enjoyed the spectacle of how low the University had fallen as it was challenged at its own doors with a despicable exhibition of public chymical experiments. The theses were, thus, censored by the Sorbonne, presumably still at the request of the rector of the University of Paris. The Sorbonne was, after all, one of the University's faculties: as such, it could easily take part in the University's serious concerns about the Jesuits. In addition, by refuting the whole matter theory of Aristotle, the theses also implicitly contradicted the Thomistic explanation of transubstantiation. On these grounds, Étienne de Clave was arrested while Antoine de Villon fled. De Clave was put on trial by the Parliament on the 5th of September 1624 and punished with banishment from the Parliament's territorial jurisdiction – which represented a large part of the French kingdom. Thus, it took less than two weeks for the University to get rid of the troublemakers. Villon and de Clave were forbidden to teach philosophy and publish or even circulate their theses both in and outside France. Furthermore, the sentence of the Parliament forbade, under penalty of death, the teaching of anything contrary to ancient, approved authorities, or of any doctrine not approved by the Faculty of theology. That sentence was used later against Cartesian philosophy and was repeatedly subjected to Voltaire's wrath and irony: an unpredictable effect of this tentative very public course of chymistry.

³⁹ Jacques Gaffarel, *Curiositez inouyes, sur la sculpture talismanique des Persans, horoscope des Patriarches, et lecture des Estoilles* (Paris: Hervé Du Mesnil, 1629), 212: "A present ce secret n'est plus si rare, car M. de Claves, un des excellents Chimistes de nostre temps, le fait voir tous les jours." Although published in 1629, this book is said to have been written soon after 1624; see *Correspondance du P. Marin Mersenne*, ed. Mme Paul Tannery *et alii*, vol. 1 (Paris: Beauchesne, 1932, re-ed. 1945), 168; and *Jacques Gaffarel Between Magic and Science*, ed. Hiro Hirai (Pisa-Roma: Fabrizio Serra, 2014), esp. the contributions by Saverio Campanini and Sylvie Taussig.

⁴⁰ Rennes, Bibliothèque des Champs Libres, MS 0162 (17th c.): *Traité de chymie soubz monsieur de Clave, et commencé ce quatorziesme jour de mars mil six cents trente*. On this MS, see Didier Kahn, "Les quatre versions successives du *Cours de Chimie* d'Etienne de Clave," *Chrysopœia* 8 (2022), forthcoming (see <https://hal.archives-ouvertes.fr/hal-03230077>).

De Clave went then to Italy, to Padua, Mantua, and Urbino. Or was it his brother? Here we enter obscure territory, that of the family de Clave. Étienne de Clave was not the only chymist of his family; nor was he the only physician. He had a brother, Jacques de Clave, who was himself both a chymist and a physician.⁴¹ Which of the two de Claves was the elder brother has been rightly questioned by Bernard Joly, due to confusing and even conflicting evidence, now expanded and carefully scrutinised.⁴²

Detailed mentions of de Clave's brother are found in a French manuscript entitled *La Chymie du jeune de Clave contenant la vraye methode de bien preparer le laudanum illustrée par ses meditations sur la preparation de l'opium et sur le vinaigre* (*The younger de Clave's chymistry, with the true method of preparing laudanum, illustrated by his meditations on opium and vinegar*). An undated preface *Aux philochymiques* (*To the lovers of chymistry*) by one "Le Givre medecin" makes perfectly clear that the whole manuscript was intended to be printed.⁴³ Le Givre complains that chymists had been exiled from their country by enemies of this art. Among them is "the younger de Clave," who went to Italy and taught his wonderful remedies in the cities of Padua and Mantua, where he held a full professorship for "quite a long time."⁴⁴ Le Givre's preface is followed by a treatise *De la Chymie* (which is properly *la Chymie du jeune de Clave*) divided into two books.⁴⁵ We find then a *Meditation sur la preparation de l'opium* (56–90) and a *Meditation sur le vinaigre* (91–132), both obviously being public courses: in each of them de Clave addresses an audience.⁴⁶ In both *Meditations*, he showed an extreme reverence and respect for his elder brother, who taught him everything in the arts and in chymistry, and even sustained him financially.⁴⁷

⁴¹ See Didier Kahn, "À propos des 'déniaisés d'Italie': le bannissement d'Étienne de Clave après l'interdiction de ses thèses de 1624," *La Lettre Clandestine* 8 (1999): 217–24.

⁴² Joly, "La théorie des cinq éléments," 18–20.

⁴³ Paris, BnF, MS fr. 2044, fols. [III]r-[IV]r (the preface is fully edited in Kahn, "Les quatre versions successives"): "C'est pourquoy je croy que tous ceux qui sont curieux et qui ayment la chymie trouveront de quoy se satisfaire dedans ces traitez, et qu'ils agréeront le retour de l'exil volontaire [*sic*] d'un si fameux auteur [...]. Si ce petit échantillon des écrits du jeune de Clave vous plait, regrettez avec moy la perte que la France a faite d'un si grand personnage, de ses écrits et de ses œuvres qui ont ravy les estrangers et tiré l'admiration de tous ceux qui l'ont connu sans passion. Maintenant que le temps a effacé la hayne que quelques misochymiques avoient conceuë contre luy, je croy qu'il sera mieux reçu et veu d'un œil plus favorable: et s'il vous est agreable par ses écrits, je m'estimeray trop heureux d'avoir produit un docteur qui enseigne la vraye preparation d'un remede si dangereux étant mal préparé et si utile étant bien fait [i.e. laudanum]."

⁴⁴ Paris, BnF, MS fr. 2044, fol. [III]r: "Et de fait qui ne les plaindra? lors qu'il sçaura qu'étant persecutez par les misochymiques, ils ont été contrains d'abandonner leur propre patrie pour se retirer en des pays éloignez [...]. Entre eux se trouve le jeune de Clave qui s'en est allé en Italie, ou il a fait des merveilles par ses excellens remedes lesquels il a enseigné dedans les villes de Padouë et de Mantouë, où il a regenté long tems [...]."

⁴⁵ Paris, BnF, MS fr. 2044, 1–9 (book 1), 9–55 (book 2). The first page of the treatise has only these headings: *Livre I*, and below: *De la Chymie. Chapitre 1*. The whole MS is written by one and the same hand.

⁴⁶ See e.g. the first page of the *Meditation sur la preparation de l'opium*, 56: "[...] Ainsi Messieurs nous avons avec votre faveur dit cy dessus que c'est que le catholicon [...]." See likewise the *Meditation sur le vinaigre*, 91: "[...] C'est pourquoy Messieurs dans ce present chapitre nous entamerons ce mixte qui est connu de tous les hommes [...]."

⁴⁷ BnF, MS fr. 2044, 68–69: "[...] Monsieur de Clave mon frere medecin (autant experimenté à la connoissance des maladies, et à la cure d'icelles et à l'anatomie de tous les secrets que la chymie nous peut et pourra dicter) asseuroit [...] que toutes les substances de l'opium sont volatiles. Que diray je donc là dessus? veu que j'ay eu de luy toutes choses, mon bien être, ma science, l'avancement en mes études, et étant denüé de moyens pour m'avancer, il m'a toujours subvenu à ses

According to Le Givre, both *Meditations* were brought from Italy by a French nobleman who travelled to Italy expressly to attend the younger de Clave's lectures, had them dictated in French, and wrote them down himself.⁴⁸ This French nobleman might be a "M. de La Grange" who is mentioned by de Clave in the end of the *Meditation sur le vinaigre*:

I will not say anything more about it due to the quick departure of Monsieur de La Grange, who would have uttered otherwise twenty-six more questions and several objections. He is to keep this for himself, not communicating it to anyone.⁴⁹

This mention might apply to the recipient of the text ("M. de La Grange") just before his return to France. Be that as it may, "M. de La Grange" is found in the correspondence of Gabriel Naudé, who calls him in 1625 a "most learned physician" while mentioning his own currently printed book *Apologie pour tous les grands personnages qui ont esté faussement soupçonnez de magie*.⁵⁰ Naudé knew the two brothers de Clave quite well. It is actually in Naudé's correspondence that we learn the name of Étienne de Clave's brother: Jacques de Clave, whom Naudé addressed as an already famous scholar and well-known acquaintance. Naudé also mentioned Jacques's brother (i.e. Étienne), whom he described as a dear friend.⁵¹ He did not specify, however, which was the younger of the two brothers.

Although Jacques de Clave seems never to have had any work printed, he obviously wrote several unpublished writings and acquired a certain fame (he was repeatedly called "Chemiatrus celeberrimus") among seventeenth-century Italian physicians.⁵² As early as

propres frais et despens, il m'a toujours enseigné les elemens soit de Galien, soit de la chymie, et tachoit par toutes façons que j'épuisasse tous les jours quelque chose digne de speculation chymique. J'ay donc épuisé toutes choses de luy, m'ayant donné tout mon être [...], d'autant que je ne dois ignorer combien la force de son esprit étoit grande, laquelle paroissant, celle des misochymiques paroissoit de tant plus obtuse ne l'ayant jamais peu convaincre d'erreur soit en la doctrine, soit en la pratique. [...] C'est pourquoy je craindrois de dire quelque chose contre un tel plustot pere que frere [...].” See also 111: “[...] Afin que mon frere connoisse que mon voyage dans l’Italie m’a donné plus d’intelligence, lors que j’ay été retiré dans la cour du prince d’Urbain, la ou je n’avois plus aucun de mon pays [*sic*], mais seulement des personnes avec lesquels je ne pouvois que parler le langage du pays, et en ce temps la j’ay medité le moyen de reconnoitre ce que c’étoit des principes des sciences naturelles.” See below, n. 62.

⁴⁸ BnF, MS fr. 2044, fol. [III]r: “[From Padova and Mantua] un gentilhomme françois tres curieux d’apprendre a rapporté quelques écrits dictés en sa langue maternelle, qu’il a pris sous luy en deux divers voyages qu’il a fait expres en Italie pour entendre ce docte personnage [the younger de Clave] et le voir operer.”

⁴⁹ Paris, BnF, MS fr. 2044, 132: “Je n’en diray rien plus a cause du prompt départ de Monsieur de La Grange, qui autrement eust eu encor vingt six questions avec plusieurs objections: qu’il garde cecy et ne le communique a aucun.”

⁵⁰ Gabriel Naudé, *Epistolae, Nunc primum in lucem prodeunt* (Geneva: Johann Hermann Widerhold, 1667), 16–18 (letter from 4 April 1625).

⁵¹ Naudé, *Epistolae*, 33: “antiqua fratris tui consuetudine non mediocriter devinctus [...]” (letter to Jacques de Clave written from Padua, 9 January 1627). On another de Clave, “Claudius Clavius” (probably a misreading of “Jacobus Clavius”), see Kahn, “Les quatre versions successives.”

⁵² See Johann Rhode, *Analecta et Notae in Ludovici Septalii Animadversiones et Cautiones Medicas* (Padua: Paolo Frambotto, 1652), 159 and Index, s.v. “Clavius”; Georg Hieronymus Welsch, *Curationum exoticarum Chiliades II et Consiliorum Medicinalium Centuria IV* (Ulm: C. B. Kuenius, 1676), 361; Giorgio Della Torre, *Dryadum, Amadryadum Cloridisque Triumphus* (Padua: P. M. Frambotto, 1685), 595 and 257; Johannes Walæus and Georg Hieronymus Welsch,

1628, he was enthusiastically celebrated by Giovanni Colle (1558–1631), first physician to the Duke of Urbino:

But the most famous and excellent Jacques de Clave, a Frenchman extremely learned and distinguished in philosophical, medical and chymical matters and faithful to the Peripatetic and Galenic truth, will soon give to the press the most useful works. He is the one who was sent to the Serene Duke of Urbino and prepared excellent remedies at his court. He is the one who, in a single year, most skillfully demonstrated chymistry to all nations in Padua. He is the one who, as the public professor, both lectures on the chymical art and demonstrates its operations in Mantua. He is the one who attended Padua on the invitation of the Paduan students to transmit, teach them and demonstrate this art. May he deliver public lectures in this most famous Paduan university: all nations would attend them in greater numbers, for this art is most carefully cultivated these days and sought after as safe and pleasant, especially if taught by the honest, most learned and skilled Frenchman Jacques de Clave, never to be praised and extolled sufficiently enough. But it is preferable to keep quiet than to say too little of this most famous man and his brother who practices medicine in Paris with much praise and success.⁵³

Jacques de Clave deserves to be acknowledged by historians of science as one of the very first (possibly the first) professors of chymistry in Italian universities.⁵⁴ As early as autumn 1626, he was appointed by Vincenzo Gonzaga, Duke of Mantua and Monferrato, as ordinary professor of chymistry in the *Pacifico Gymnasio Mantuano*.⁵⁵ This short-lived university had

Methodus medendi brevissima, ad circulationem sanguinis adornata (Augsburg: Th. Goebbel for the Koppmayers, 1689), 156.

⁵³ Giovanni Colle, *Methodus facile parandi jucunda, tuta & nova medicamenta et ejus applicatio adversus Chemicos* [i.e. pseudo-chymists] (Venice: Evangelista Deuchino, 1628), 145 (see also 141): “Sed Clarissimus et Excellentissimus Jacobus Clavius Gallus, Vir in Philosophia, Medicina, et Chymica eruditissimus et elegantissimus non discedens a veritate Peripatetica, et Galenica cito typis mandabit utilissima volumina; Is est qui ad Serenissimum Urbini Ducem missus egregia in Aula confecit, Is est, qui Patavii singulo anno doctissime omnibus nationibus chymicam ostendit; Is est, qui Mantuæ publicus Professor artem chymicam, et operationes, et legit, et exercet; Is est qui accersitus a Scolaribus Patavinis ad hanc artem ipsis tradendam, legendam, et ostendendam Patavium petit: utinam in hoc celeberrimo Gymnasio Antenoreo publice legeret [;] omnes enim nationes frequentiores accederent, cum his temporibus haec ars summopere ab omnibus excolatur, et ab omnibus expetatur tanquam tuta, et jucunda, et praesertim edocta a Viro candido, a Viro doctissimo, et peritissimo Jacobo Clavio Gallo nunquam satis laudando, nunquam satis extollendo, sed de hoc Viro Clarissimo, et ejus fratre, qui Parisiis Medicinam facit summa cum laude, et lucro, melius est silere, quam pauca dicere.” On Giovanni Colle, see Carlo Colombero, “Colle,” *Dizionario Biografico degli Italiani*, Vol. 26 (Rome: Edizioni della Enciclopedia Italiana, 1982), 799; Pietro Monego, *Le epidemie del passato e gli straordinari rimedi della medicina popolare zoldana*, online publication, February 2020 (<http://dallacasatadilevazono.altervista.org/monego-le-epidemie-del-passato-e-la-medicina-popolare-zoldana>, accessed 27 September 2020).

⁵⁴ Since Jacques de Clave’s writings seem to be lost, he has been overlooked in the otherwise very rich survey by Antonio Clericuzio, “Chemical Medicine and Paracelsianism in Italy, 1550–1650,” in *The Practice of Reform in Health, Medicine, and Science, 1500–2000*, ed. Margaret Pelling and Scott Mandelbrote (Aldershot: Ashgate, 2005), 59–79. See also Antonio Clericuzio, “Chemical Medicines in Rome: Pietro Castelli and the Vitriol Debate (1616–1626),” in *Conflicting Duties: Science, Medicine and Religion in Rome, 1550–1750*, ed. Maria Pia Donato and Jill Kraye (London: The Warburg Institute, 2009), 281–302.

⁵⁵ Paul F. Grendler, *The University of Mantua, the Gonzaga and the Jesuits, 1584–1630* (Baltimore: The Johns Hopkins University Press, 2009), 179: “*ad lecturam Chymiae*.” The name found in the archival records is apparently

been founded in Mantua only one year before, and tragically collapsed three years later in 1629 after the death of Duke Vincenzo Gonzaga (at the end of 1627) and the ensuing war of succession – finally leading to the sack of Mantua (1630).⁵⁶ The new position obtained by Jacques de Clave was the reason why Gabriel Naudé, writing from Padua on 9 January 1627, eloquently congratulated him for his appointment.⁵⁷ De Clave was not the very first appointed chymist there, but he was the first full-time ordinary professor, a solid, prestigious position. In the previous academic year (1625–1626), which was the first of the newly founded university, Vincenzo Gonzaga, fond as he was of alchemy – in line with a firmly established family tradition⁵⁸ – had appointed a Sicilian physician, Pietro Antonio Cavalli, as a demonstrator of distillation and the preparation of chymical remedies, to be performed on vacation days (using the distillery of the ducal distiller, Fausto Vialardi). But for the next academic year, Cavalli was replaced by Jacques de Clave, whose position was expressly described *ad lecturam Chymiae*, not merely distillation: de Clave was to lecture on the theory of chymistry and to demonstrate practical operations; not on vacation days, but on ordinary teaching days, which made all the difference.⁵⁹

Paracelsianism in Mantua has been discussed more fully by Paul Grendler.⁶⁰ The only precedent for Jacques de Clave's academic position in Italy was the position of the Scots physician Giacomo Macolo (presumably the italianised name for James McCole, or MacCallough). Whatever his precise identity may have been, Giacomo Macolo was clearly fond of the ideas of Petrus Severinus. He was appointed in 1614 to teach chymical medicine in the University of Pisa. His position, however, disappeared in 1618. Besides these two short-lived academic appointments in Pisa and Mantua, there was no chair of chymical medicine or chymistry in Italy until the eighteenth century. As Grendler puts it, "The University of Bologna discussed establishing a professorship of chemistry in 1617 and again in 1633, but did not do so until 1737." Other Italian universities only followed its lead later on.⁶¹

"Excellentissimus Artium, et medicinæ Doctor Dominus Ioannes Clavius Gallus" (179 n. 15), but "Ioannes" is an evident mistake for "Iacobus". Other abundant evidence such as Colle's or Naudé's testimonies leave no room to doubt.

⁵⁶ Grendler, *The University of Mantua*, 232–46.

⁵⁷ Naudé, *Epistolæ*, 36–37 (*Doctissimo Viro Domino Jacobo Clavio, Medicinæ Chymicæ in Collegio Mantuano Professori dignissimo*). Latin text and French trans. in Kahn, "À propos des 'déniaisés d'Italie'," 223.

⁵⁸ Grendler, *The University of Mantua*, 56–72, 130–31.

⁵⁹ Grendler, *The University of Mantua*, 178–79.

⁶⁰ Grendler, *The University of Mantua*, 181–82.

⁶¹ Grendler, *The University of Mantua*, 181. Grendler precised: 1743 (Ferrara), 1748 (Rome), 1759 (Padua), 1773 (Pavia), 1780 (Siena). On chemistry at Bologna University in 1737 and shortly after, see Giorgio Pedrocchi, "Gli studi di chimica all'Istituto delle Scienze di Bologna nel corso del XVIII secolo," in *I materiali dell'Istituto delle Scienze*, exhibition catalogue (Bologna: CLUEB, 1979), 226–29; Walter Tega, "L'Istituto e l'Accademia delle Scienze," in *Storia illustrata di Bologna*, ed. Walter Tega (Milano: N.E.A., 1989), vol. VI, 261–80; Didier Kahn, "Le fonds Caprara de manuscrits alchimiques de la Bibliothèque Universitaire de Bologne," *Scriptorium* 48 (1994): 62–110 (on 66–67 n. 19, and 72–74).

Thus, Jacques de Clave was clearly a pioneer, and was obviously a very successful chymistry lecturer.

If we now return to the Paris manuscript prefaced by Le Givre, enlightened as we are by these reliable testimonies, we can see that Le Givre's description of the younger de Clave, who taught chymistry in Padua and Mantua, can only apply to Jacques de Clave. Furthermore, Giovanni Colle mentioned, in his praise of Jacques de Clave, the latter's visit to the court of Urbino, and the author of the *Meditation sur le vinaigre* in the aforesaid Paris manuscript evoked this very same court twice:

We shall return to it [Severinus' opinion] in due time, so that my brother can know that my travel in Italy gave me more insight when I was confined to the court of the prince of Urbino. There was no one from my own country to socialise with there, but only people with whom I had to speak the local language. In that time I have thought about the best way to understand the principles of the natural things.⁶²

And later:

Thereafter we shall discuss what paralysis is, since we are in this court where we have been called to have the honour of treating His Highness, i.e. the Duke of Urbino, plagued with paralysis and gout [...].⁶³

All these mentions *seem* to provide convincing evidence that the younger de Clave was Jacques, not Étienne. This means that the whole manuscript prefaced by Le Givre should be attributed to Jacques de Clave, instead of Étienne. Other consequences follow. *La Chymie du jeune de Clave* in the same manuscript happens to be the French version of a Latin unpublished *Cursus Chymicus* attributed to Étienne de Clave.⁶⁴ Thus, should this *Cursus Chymicus* be ascribed, not to Étienne, but to Jacques de Clave as well? The same could be said of the *Cours de chimie* published in 1646 under Étienne's name, given their similarities. However, this evidence is severely weakened by internal comparisons.

⁶² See above, n. 47, second quotation.

⁶³ BnF, MS fr. 2044, 129–30: “en après nous discourerons que c'est que paralysie, puisque nous sommes en cette cour où nous avons été appellez pour avoir l'honneur de traiter Son Altesse, à sçavoir le Duc d'Urbain affligé de paralysie et podagre [...].”

⁶⁴ Paris, BnF, MS lat. 7178 A: *Stephani Clavei Præcognita generalia de arte Chymica*. See the short, but revealing comparison between both texts in Kahn, *Alchimie et paracelsisme*, 546–47. For a detailed comparison see Kahn, “Les quatre versions successives.”

In the French manuscript, chap. x of the first book *De la Chymie* is entitled *Du phlegme*. There we can read a fairly systematic presentation:

Mixed bodies can be resolved by the artist into five principles or elements. We call them principles for they are incorruptible, and cannot be converted one into another. We shall begin with summarily describing the definition of said principles.⁶⁵

Then comes a description of these five incorruptible principles: phlegm (or water) is followed by chapters on spirit (always acid), oil (or sulphur), salt, and earth.⁶⁶ We recognise here very clearly the ideas of Étienne de Clave not only in his fourteen theses, but even in his *Nouvelle Lumière Philosophique* (1641).⁶⁷

It follows, then, that the *Cours de Chimie* published in 1646, which has exactly the same ideas, must be the work of Étienne de Clave.⁶⁸ We can also find these same ideas in the two other manuscript versions of the *Cours de Chimie*: one in Rennes (a version dated 1630), the other in Montpellier (copied after 1646 from an earlier manuscript).⁶⁹ Actually the only version where these ideas are not found is the Latin version, which clearly is the oldest, most primitive one.

It appears, then, that Le Givre confused Étienne with Jacques de Clave in his preface to the French Paris manuscript. How so? Le Givre's preface must have been written after Étienne de Clave's death, not after his return from exile, which is a first cause of confusion. In addition, several remarks of Le Givre are confusing in and of themselves. He seems first to say that the younger de Clave has now returned from his exile (which was "deliberate," according to him). But later he clearly says that de Clave has died.⁷⁰ Since we now clearly see that Le Givre wrote his preface after de Clave's death (*ca.* 1645), not after his return from exile (*ca.* 1627), Le Givre can be better identified. He was most probably Pierre Le Givre (*ca.* 1618–1684), a physician who published several books on mineral waters between 1659 and

⁶⁵ BnF, MS fr. 2044, 6: "Les mixtes se peuvent resoudre par l'artiste en cinq principes ou elemens: nous les nommons principes d'autant qu'ils sont incorruptibles, et on ne les peut convertir de l'un en l'autre: nous commencerons a décrire sommairement la definition desdits principes."

⁶⁶ BnF, MS fr. 2044, 6–7 (chap. x to xiiii).

⁶⁷ Étienne de Clave, *Nouvelle Lumière Philosophique des Vrais Principes et Elemens de Nature, & Qualité d'iceux. Contre l'opinion commune* (Paris: Olivier de Varennes, 1641), "Au Lecteur," fol. [Aiiij]r–v (elements are incorruptible: see also II, v, 297; II, vi, 303, 306; II, viii, 345; II, xiv, 419); I, vii (five elements; see also I, xvii, 159–160); and e.g. II, xiv, 414 (elements cannot be converted one into another).

⁶⁸ Étienne de Clave, *Cours de Chimie* (Paris: Olivier de Varennes, 1646), 3–5 and 20.

⁶⁹ Rennes, MS 0162 (see above, n. 40), fols. 17r–v and 21v; Montpellier, Bibl. Interuniversitaire, section Médecine, MS H 464 (*Elementi di Chimia di Monsù de Clave, o sia corso o Tyrocinio chimico, come fece il Beguino*), in French, 2–4 and 10. On this MS, see Kahn, "Les quatre versions successives."

⁷⁰ See above, n. 43: 1° "tous ceux qui sont curieux [...] agréeront le retour de l'exil volontaire d'un si fameux auteur." 2° "regrettez avec moy la perte que la France a faite d'un si grand personnage, de ses écrits et de ses œuvres [...]."

1677.⁷¹ He probably did not know de Clave personally, otherwise he could not have made such a mistake. His words on the teaching of de Clave in Italy evidently apply to Jacques de Clave, as does his mention of de Clave's deliberate exile. However, the younger de Clave is actually Étienne. Should the whole manuscript be attributed to him? It definitely seems so. A last doubt remains: whereas *La Chymie du jeune de Clave* is clearly by Étienne de Clave, the two *Meditations* on opium and vinegar might be works by Jacques de Clave. A comparison between Étienne de Clave's ideas on opium and the ideas expressed in the *Méditation sur la préparation de l'opium* shows, however, that the latter is actually another work by Étienne de Clave, and therefore the *Méditation sur le vinaigre*, obviously by the same author as the former, is Étienne's work, too. The *Méditation* on opium deals with laudanum. The core idea is that opium is mostly warm and accidentally cold, contrary to the teachings of Galenic medicine. If we now turn to the chapter on laudanum from *La Chymie du jeune de Clave*, we can read this statement:

The basis of this remedy is opium, considered by many as cold, and therefore to be corrected by warm and sharp substances. I however contend that opium is warm, as it contains plenty of volatile spirit, oil and salt.⁷²

In the *Méditation*, detailed explanations are given for this abundance of sulphur (i.e. oil), spirit and salt within opium and how it makes it warm instead of cold.⁷³ Thus both texts are consistent, and this concordance is found in other versions of the *Cours de Chimie*. Not in the Latin version, however, nor in the version printed in 1646, where nothing is said about opium being warm or cold.⁷⁴ But in the Montpellier and Rennes manuscripts, both of which are a different version of the *Cours*, de Clave ends his instructions for the preparation of laudanum by mentioning that Oswald Croll, in his *Basilica Chymica* (1609), erroneously believed that opium was cold and therefore added several warm remedies to correct its coldness.⁷⁵ In this

⁷¹ See Louis Corlieu, "Charly, patrie de Pierre Le Givre. Les eaux minérales de Château-Thierry," *Annales de la Société historique et archéologique de Château-Thierry* 1870–1871 [published 1872]: 67–70. See e.g. Pierre Le Givre, *Le Secret des eaux minérales acides* (Paris: Jean Ribou, 1667). This book was reviewed by Samuel Cottureau Du Clos for the Académie Royale des Sciences: see Rémi Franckowiak, "La chimie du XVII^e siècle: une question de principes," *Methodos* 8 (2008): <https://journals.openedition.org/methodos/1823> (accessed 21 October 2020), n. 92. A second edition (1677) has a title reminiscent of Étienne de Clave's *Paradoxes* and *Nouvelle Lumière Philosophique: Le secret des eaux minérales acides, nouvellement découvert par le moyen des principes chymiques, qui combat l'opinion commune*.

⁷² BnF, MS fr. 2044, 11–14: "La base d'iceluy est l'opium que plusieurs estiment estre froid, et à cet effet le veulent corriger avec choses chaudes et acres: quant à moy je tiens que l'opium est chaud, par ce qu'il abonde en esprit, huile et sel volatiles [...]."

⁷³ BnF, MS fr. 2044, 58–62.

⁷⁴ De Clave, *Cours de Chimie*, 54.

⁷⁵ Montpellier, Bibl. interuniversitaire, section Médecine, MS H 464, 94–95; Rennes, MS 0162, fol. 67v (word for word identical): "De la confection du laudanum" (corresponding to, but quite different from the *Cours de Chimie* of 1646, 53–54,

version of the *Cours de Clave* did not feel it necessary to enter into more detailed explanations; perhaps he had not yet considered it.

A last point to be clarified is the mention of the Duke of Urbino. From the statements of Étienne de Clave in these two *Meditations*, we can infer that he travelled to the court of Casteldurante to treat the old Duke of Urbino, Francesco Maria II Della Rovere (1549–1631), who suffered from paralysis and gout.⁷⁶ It has not been possible to find a mention of de Clave at Urbino in the literature on the Duchy and the Duke thus far.⁷⁷ A confusing detail is the fact that Jacques de Clave himself, according to Giovanni Colle, “was sent to the Serene Duke of Urbino and prepared excellent remedies at his court.”⁷⁸ Actually Colle was the first physician to the Duke, and it was he who invited Jacques de Clave to the court. In addition, Colle knew both Jacques and Étienne de Clave, “his brother who practices medicine in Paris with much praise and success.” Could he have confused one with the other? Certainly not. My educated guess is that Jacques de Clave, *after* 1626 – i.e. after his appointment at the University of Mantua, suddenly found himself lacking time to attend the court of the Duke and called on his brother to carry on with his own duties at the Duke’s bedside. This would have occurred after Colle’s lengthy praise of Jacques, i.e. in, or after, 1628.

Be that as it may, the two *Meditations* are obvious testimonies of Étienne de Clave’s teaching in Casteldurante, at the court of the Duke, as he expressly told himself ???(above, n. 63). The two *Meditations* are, then, rare specimens of chymical courses as they were actually taught by Étienne de Clave in front of an audience.⁷⁹

Should we dismiss the testimony of Joachim Jungius’ pupil Christoph Schelhammer, who declared that Étienne de Clave took refuge in Rennes (Brittany) after his condemnation?⁸⁰ Schelhammer wrote that in 1642, conveying information gathered among friends of de Clave. His account may be based on hearsay as much as on reliable facts. Brittany was, however, outside of the territorial jurisdiction of the Parliament of Paris, which makes Schelhammer’s statement perfectly plausible. Furthermore, this statement does not contradict that of de Clave

where Croll is referred to without any criticism): Croll (de Clave writes) “ajoute plusieurs essences, que je treuve trop chaudes [...] ce qui l’a faict errer est que se conformant à l’opinion vulgaire, il a creu que l’opium estoit froid, et partant il a voulu adjouster force remedes chauds pour corriger sa froideur.”

⁷⁶ See above, n. 63.

⁷⁷ See e.g. Gino Benzoni, “Francesco Maria II Della Rovere, duca di Urbino,” in *Dizionario biografico degli Italiani*, vol. 50 (1998), online ([www.treccani.it/enciclopedia/francesco-maria-ii-della-rovere-duca-di-urbino_\(Dizionario-Biografico\)](http://www.treccani.it/enciclopedia/francesco-maria-ii-della-rovere-duca-di-urbino_(Dizionario-Biografico)), accessed 3 October 2020); Massimo Moretti, “Una tebaide, un giardino filosofico e un ritiro dinastico a Casteldurante per Francesco Maria II Della Rovere,” in *I Giardini del Duca: luoghi di delizia dai Montefeltro ai Della Rovere*, ed. Anna Cerboni Baiardi (Milano: Silvana Editoriale, 2018), 167–83.

⁷⁸ See above, n. 53.

⁷⁹ See the beginning of the *Meditation* on opium edited in Kahn, “Les quatre versions successives.”

⁸⁰ Avé-Lallemant, *Des Dr. Joachim Jungius aus Lübeck Briefwechsel*, 188.

himself, saying that he travelled to Italy to attend the court of Urbino. Thus, we can accept Schelhammer's testimony as genuine, or at least entirely possible.

When did the exile of Étienne de Clave end? If we are to believe Colle's testimony, Étienne de Clave, in 1628, was "practicing medicine in Paris with much praise and success." Furthermore, we have strong evidence that as early as March 1627 de Clave was back in Paris: he wrote an entry about an alchemical recipe of *mercurium saturninum* (supposed to reduce gold into a powder without any external heat) in the *album amicorum* of the Paracelsian Daniel Stolcius.⁸¹ The entry was dated with these words:

Written by Étienne de Clave, medical doctor, whom the most learned physician Daniel Stolcius is bound to by mutual affection, in Paris on 20 March 1627 as a perpetual testament of friendship expressed in these few words that nonetheless reveal much.⁸²

We can sum up these findings in this way: Jacques de Clave was the first professor of chymistry in Italy, appointed ordinary professor of chymistry in the *Pacifico Gymnasio Mantuano* from autumn 1626 to (probably) 1629. There he taught not only practical, but also theoretical chymistry. The only precedent for his position was that of Giacomo Macolo, who taught chymical medicine – but not *chymia* alone, like Jacques de Clave – in the botanical garden of Pisa from 1614 to 1618. Jacques de Clave also gave lectures on chymistry at the University of Padua for one single year (before 1628). Thus far, no specific writings by him have come to light.

As for Étienne de Clave, he certainly lectured on chymistry in Paris before 1624. His Latin textbook, which is the oldest testimony of his lectures, obviously antedates the fourteen theses of 1624, for it does not mention the theory of the five elements and relies heavily on Beguin. Where de Clave went into exile in 1624 is unclear; the only positive statement that we know of (a second-hand report gathered by Christoph Schelhammer) is that he went to Rennes in Brittany, a fairly sound possibility. He came back in Paris in 1627 at the latest and probably resumed his teaching. At some time in or after 1628 he travelled to Casteldurante to cure the Duke of Urbino (d. 1631). There he began to "meditate on the means of

⁸¹ See Kahn, "Les quatre versions successives."

⁸² Uppsala, Universitetsbibliotek, MS. Y 132 d, p. 404: "Haec paucis sed multa reserantibus in perpetuum amicitiae symbolum scribebat Stephanus de Clave doctor medicus Lutetiae Parisiorum anno Domini 1627 die 20 Martii. Cui quidem sese mutuo obstrinxit amore doctissimus medicus Dominus Daniel Stolzius." On Stolcius and his *album amicorum* see Wilhelm Kühlmann, "Poeta, Chymicus, Mathematicus. Das Stammbuch des böhmischen Paracelsisten Daniel Stoltzius von Stoltzenberg," in *Parerga Paracelsica*, ed. Joachim Telle (Stuttgart: Franz Steiner, 1991), 277–300, on 295 for Étienne de Clave (not identified by Kühlmann).

comprehending what can be known about the principles of natural sciences.”⁸³ This new stage resulted in his *Meditations* – the most vivid testament of his teaching – only two of which are still extant, and in his many treatises, of which only two were published: the *Paradoxes* (1635, already written in 1631, at least in part) and the *Nouvelle Lumière Philosophique* (published in 1641, but given to the printer as early as 1638).⁸⁴ The *Meditations* were part of his teaching in Italy at the court of the Duke of Urbino. As for his other treatises, his publisher Olivier de Varennes, when asked about them by Christoph Schelhammer in 1642, answered that he had his hands full and could not consider publishing another of de Clave’s treatises for at least the next six months.⁸⁵ Only after de Clave died did Olivier de Varennes publish one further tract: the *Cours de Chimie*, quite an old version of this work, which de Clave would have certainly refused to publish in this form – if its other, more developed manuscript versions are any indication.

It is entirely possible that de Clave delivered more chymical lectures after his *Paradoxes* (where he mentioned his twenty-five previous lectures). We only have Schelhammer’s imprecise testimony on de Clave’s lectures.⁸⁶ The early date of the first chymical courses of William Davisson (1633) seems to show that de Clave and Davisson lectured concurrently. By 1642 de Clave no longer lived in Paris, as attested by Schelhammer. He probably died in 1644 or 1645, before the posthumous publication of the *Cours de Chimie*.⁸⁷

Guy de La Brosse (1586–1641), William Davisson (ca. 1593–1673)⁸⁸ and Annibal Barlet (fl. 1641–1660)

The next step towards institutionalised courses of chymistry was the foundation of the *Jardin Royal des Plantes médicinales*, instigated by Guy de La Brosse.⁸⁹ This brings us back to 1625, one year after the exile of Étienne de Clave. After many unfruitful attempts, La

⁸³ See above, end of n. 47.

⁸⁴ The Privilege, dated 1636, was not granted de Clave, but Nicolas Le Gras, chaplain of the King’s brother Duke Gaston d’Orléans, perhaps as a result of de Clave’s cautiousness. The Privilege was transferred by Le Gras to de Clave himself in 1638 and at once transferred to the publisher, Olivier de Varennes.

⁸⁵ Avé-Lallemant, *Des Dr. Joachim Jungius aus Lübeck Briefwechsel*, 187.

⁸⁶ Avé-Lallemant, *Des Dr. Joachim Jungius aus Lübeck Briefwechsel*, 188: “Er lebt noch, ist ungefähr 55 Jahr alt, von melancholischem Temperament, liebt die Einsamkeit und ist weniger gewandt mit der Zunge als mit der Feder. So haben mir befreundete Franzosen erzählt, die ihn, als er noch in Paris lebte, genauer gekannt haben. – Als er hier lebte, trieb er auch ärztliche Praxis, hielt verschiedentlich chemische Vorlesungen und theilte seinen Schülern mehrere Processe mit in Betreff der Zubereitung verschiedener Arzneimittel.”

⁸⁷ For the *Cours de Chimie*, Olivier de Varennes used the same privilege granted to Nicolas Le Gras in 1636 for the *Nouvelle Lumière Philosophique*. This privilege had been granted for a timespan of nine years. It was imperative, thus, for the publisher to have the *Cours de Chimie* printed before the end of 1645.

⁸⁸ On the date of Davisson’s death erroneously given as 1669, see Didier Kahn, “N*** Corneille, Paul Dubé, William Davisson et la vie littéraire autour du Jardin Royal vers 1650,” *XVII^e Siècle* n° 265 (Oct. 2014): 709–17.

⁸⁹ On La Brosse, see above, n. 35.

Brosse, supported by the King's first physician, Jean Héroard, implored the King himself to create a royal garden. This time his request was granted: the garden was founded by the King in January 1626. Guy de La Brosse had expressly "promised" to the King, if he created it, to "give a course on the art of distillation and demonstrate its operations to all those who might so desire."⁹⁰ It took several more years, however, before the garden was opened. In 1628, Jean Héroard died. The new first physician to the King was Charles Bouvard, a doctor from the medical Faculty of Paris, who nonetheless proved to be perfectly supportive of La Brosse's project, so much so that he noticed that the King had not yet funded the positions of the demonstrators. The funding was finally granted in 1635, the same year as de Clave's *Paradoxes* were published: three demonstrators were to be in charge of teaching the virtues of plants, according to their diverse uses and preparations, both standard and chymical.⁹¹ Of course the Faculty of medicine complained and took legal actions against the edict of the King, but in vain. The Faculty wanted its strong opposition to any teaching of chymistry in Paris to be expressly recorded.⁹² There is, however, no evidence of such a strong reaction to either Beguin or de Clave. Obviously, this opposition of the Faculty responded to the threat of an *institutionalised* teaching of chymistry. But it was to be some years before the teaching in the *Jardin royal* could finally begin. The garden opened in 1640.⁹³ One year later La Brosse published, shortly before his death, a list of 227 students who attended the demonstrations in 1641, most of whom were students in medicine. Eight of them, however, were recorded as "students in chymistry."⁹⁴ Thus there were specific lectures on *chymistry* at the *Jardin royal*

⁹⁰ Guy de La Brosse, *Epistre au Roy* (n.pl., n.d.), re-issued along with La Brosse's treatise *De la nature, vertu et utilité des plantes* (see above, n. 35), 683–702, on 196 [*recte*: 696]: "Ayant assuré Vostre Majesté de tenir des eaux, des sucs, des essences & des sels des Plantes, dont trois sont œuvres de feu, il est fort à propos de rendre raison de leur façon. Pour cela, je promets de faire un cours de l'Art distillatoire, & de monstrier toutes ses operations aux desireux d'apprendre." This text was written before Jean Héroard was named superintendent of the Royal Garden (January 1626), for La Brosse does not mention this position, nor his own position as intendent of the garden (granted by Héroard on 8 August 1626): see Jacqueline Vons, "Le médecin, les institutions, le roi. Médecine et politique aux XVI^e-XVII^e siècles" (Paris: Cour-de-France.fr, 2012), <http://cour-de-france.fr/article2342.html> (accessed 11 October 2020), Part III, § 4, n. 111 (January 1626) and 112 (August 1626).

⁹¹ Guy de La Brosse, *Description du Jardin Royal des Plantes medecinales* (Paris: n.n., 1636), digitised on the database Medic@ (see above, n. 35), 19: "[...] trois Docteurs pour y enseigner les vertus des Plantes selon leurs divers usages & preparations, tant ordinaires que Chimiques, une officine pour ce dessein, un sous Demonstrateur des plantes, & autres officiers grandement utiles & necessaires à son tres-loüable dessein." The royal edict is summarised in Vons, "Le médecin, les institutions, le roi," Part III, § 4, n. 117.

⁹² Rio Howard, "The Founding of the Jardin des Plantes in Paris," *Journal of the Western Society for French History* 2 (1974): 138–50 (on 147). See Jussieu's summary of the Faculty's motivations (20 Dec. 1636) in Antoine-Laurent de Jussieu, "Notice historique sur le Muséum d'histoire naturelle," *Annales du Muséum d'histoire naturelle* 1 (1802): 1–14 (on 12).

⁹³ Guy de La Brosse, *L'Ouverture du Jardin Royal de Paris, pour la Demonstration des Plantes Medecinales* (Paris: Jacques Dugast, 1640).

⁹⁴ Guy de La Brosse, *Catalogue des Plantes cultivées à present au Jardin Royal des Plantes Medecinales* (Paris: n.n. [Jacques Dugast], 1641), 1–8: "Liste des Estudians à la connoissance des Plantes au Jardin Royal de Paris, & aux operations de la Medecine, qui s'y font l'an 1641." On the detailed history of the creation of the Jardin Royal, see also Alexandre Lunel, *La Maison médicale du Roi, XVI^e-XVIII^e siècles* (Seyssel: Champ Vallon, 2008), 164–80 (with an erroneous chronology on 168–69), *not* to be read without the splendid annotated bibliography by Louis Denise, *Bibliographie historique et iconographique du Jardin des plantes* (Paris: H. Daragon, 1903), 21–46.

even before La Brosse's death, perhaps taught by the most knowledgeable person available: La Brosse himself, even if he was officially only in charge of the "demonstration of the exterior of plants" (i.e. their morphology).⁹⁵

No further reliable information on possible courses at the Jardin royal between 1640 and 1648 is available. Those in charge of teaching the "interior" of plants were the physicians Jacques Cousinot (ca. 1585–1646) and Urbain Baudinot (d. ca. 1669-1671). They were to work in front of the students on "all pharmaceutical operations, both standard and chymical." While Cousinot, however, seems to have taught only *materia medica* (i.e. herbal material for pharmaceutical use), Baudinot, according to Jussieu, does not seem to have taught at all.⁹⁶ Whereas several details provided by Contant (and constantly repeated after him) seem to confirm the reality of chymical teaching between 1642 and 1648, they are not supported by contemporary evidence, but are imaginary reconstructions based on later seventeenth or eighteenth-century descriptions of the different positions at the *Jardin Royal*. After La Brosse's death, the *Jardin Royal* seems to have been neglected as two rivals struggled either to maintain, or, by deposing the other, to obtain the office of superintendent, until at last William Davisson, at 6 a.m. on 23 July 1648, "opened the botanical and chymical fountains to all those thirsty of knowledge" (which clearly implies that they had been closed until then).⁹⁷

It has been described, and it would be tedious to repeat, how William Davisson was appointed intendant of the *Jardin Royal* in a ruling of the *Conseil d'État du Roi* from 1647.⁹⁸ The text of Davisson's appointment as a *professor of chymistry* is, strangely enough, never quoted, although it *seemed* to be located in the same document.⁹⁹ This appointment was nevertheless very publicly known. On 29 July 1651, Théophraste Renaudot's *Gazette* reported

⁹⁵ Precise, practical details and documents (posters in Latin, programs...) about teaching in the beginnings of the Jardin Royal are given by Jean-Paul Contant, *Contribution à l'histoire de l'enseignement de la pharmacie: l'enseignement de la chimie au Jardin Royal des plantes de Paris* (Cahors: Imprimerie A. Coueslant, 1952). They are repeated in many publications, such as Lunel, *La Maison médicale*, 175, or Clericuzio, "Sooty Empiricks," 337–38. When checked against their sources, however, they are found to be only relevant to the teaching in late 17th and 18th century. As for La Brosse's times, there is no such document whatsoever available – except the rules listed at the end of La Brosse, *L'Ouverture du Jardin Royal*. The description of his laboratory is also relevant: Rio Howard, *La Bibliothèque et le laboratoire de Guy de La Brosse au Jardin des Plantes à Paris* (Geneva: Droz, 1983), 15–18, 40–47.

⁹⁶ Contant, *Contribution*, 16 (edition of the edict of 1635), 37, 42, 47.

⁹⁷ Ernest-Théodore Hamy, "William Davisson, intendant du Jardin du Roi et professeur de chimie (1647–1651)," *Nouvelles Archives du Muséum* 3^e série, 10 (1898): 1–38, on 15: "Auspiciis Regis. Willielmus Davissonus, Scotus, Consiliarius et Medicus Regius, Horti Regii plantarum medicinalium Præfectus [§] Botanicum et chemicum fontem aperiet cognitionis et scientiæ cupidis. [...] In Antimonii præparatione et exaltatione multus erit; quia non sufficiunt nomina, ad tam divitem naturam appellandam, quæ Principium Vitæ, Balsamum, & Medentem Mumiam in se habet. Verum, verum dico, non est sub cælo medicina sublimior." Vons mentions, in "Le médecin, les institutions, le roi," Part III, § 4, n. 122, a request by Davisson about antimony in the *Commentaries* of the Medical Faculty of Paris (Paris, BIUS, MSS), vol. XIII (1643), fol. 217. The original poster containing the advertisement can be found in William Davisson, *Commentariorum in [...] Petri Severini Dani Ideam Medicinæ Philosophicæ [...] Prodromus* (The Hague: Adriaan Vlacq, 1660), end of the *Errata*.

⁹⁸ Besides Hamy, "William Davisson," 13, and John Read, "William Davidson of Aberdeen, the first British professor of chemistry," *Ambix* 9 (1961): 70–101, see more precisely Lunel, *La Maison médicale*, 178 (referring to Paris, Archives Nationales, AJ/15/502, n° 65).

⁹⁹ Unfortunately, it is not.

that three days earlier Davisson resigned his offices as both Intendant of the Garden and Royal Professor of chymistry.¹⁰⁰ As Contant noticed in the case of Fagon, the title of professor was not used systematically at the Royal Garden until the appointment of Étienne-François Geoffroy (1712).¹⁰¹

Living in France since 1614, Davisson had practiced medicine in Paris since 1626, treating mostly patients coming from the British Isles. We know for certain that he taught chymistry in Paris from at least 1633 – and probably earlier (it has even been suggested that he began teaching after the death of his patron, Claude Dormy, in 1628,¹⁰² but there is no solid proof to sustain this hypothesis). His *Philosophia Pyrotechnica* first appeared in 1635.¹⁰³ However, parts 3 and 4 of that work, most often included in the same volume as parts 1–2, were dated 1633 and described as having been “excerpted from his course for the benefit of his listeners.”¹⁰⁴ John Read has shown that these two parts were originally privately and separately printed by Davisson in 1634 for the benefit of his students, as evidenced by a separate copy with a specific title-page in the Ferguson collection (Glasgow University).¹⁰⁵ The first two parts of his book are more complex than the two others, even if Davisson teaches almost basic notions of cosmology, particularly his system of seven elements, combining the three chymical principles and the four elements.¹⁰⁶ More specifically, Davisson develops an atomistic theory according to which both the *tria prima* and the four principles are made up of atoms of different natures. Davisson was a great admirer of Severinus, and explained in detail the latter’s Neoplatonist doctrine of *semina rerum*. The *semina*, endowed

¹⁰⁰ *Gazette* No. 95 (July 1651): 768: “Le 26, le sieur Davissonne Escossois [...] partit d’ici, apres avoir remis entre les mains du sieur Vautier premier Médecin du Roy la charge qu’il lui avoit commise il y a quatre ans [i.e. in 1647] d’Intendant du jardin Royal des plantes médecinales en cette ville, & de Professeur du Roy en Chymie.” Partially quoted by Ernest-Théodore Hamy, “Recherches sur les origines de l’enseignement de l’anatomie humaine et de l’anthropologie au Jardin des plantes,” *Nouvelles archives du Muséum*, 3^e série VII (1895): 1–30 (on 8 n. 1); entirely quoted by Contant, *Contribution*, 84.

¹⁰¹ Contant, *Contribution*, 33 and 48, 42.

¹⁰² Read, “William Davidson,” 74, followed by Lawrence M. Principe, “Davisson [D’Avissonne], William,” in *Oxford Dictionary of National Biography* (online: <https://doi-org.janus.bis-sorbonne.fr/10.1093/ref:odnb/7307>, 23 September 2004), accessed 18 October 2020.

¹⁰³ William Davisson, *Philosophia Pyrotechnica, Willielmi d’Avissoni Scoti doctoris medici. Seu Curriculum chymiatricus nobilissima illa & exoptatissima medicinae parte pyrotechnica instructus [...], artificiosam novamque rerum naturalium speculationem, & in usus medicos præparationem, & administrationem, in se continens [...]* (Paris: Jean Bessin, 1635). Two copies are known in France, both in Paris: Bibliothèque interuniversitaire de la Sorbonne, and Bibliothèque Sainte-Geneviève. Other copies are described by Read, “William Davidson,” 80–81 n. 31.

¹⁰⁴ The work consists of four parts. The book is physically divided into three tomes contained in one single volume. Tome I contains parts 1 and 2. Parts 3 and 4 have each a specific title-page: “Pars tertia curriculi chymici de vocabulis chymicæ operationi inservientibus. Ex curriculo W. D. doctoris medici in usum auditorum suorum excerpta. Parisiis. M.DC.XXXIII,” and “Pars quarta curriculi chymici operationes chymicas [...] perficere docens, novamque & peculiarem principiorum demonstrationem, tutissimam medicamentorum præparationem, & in morbis omnibus administrationem in se continens. Ex curriculo W. D. doctoris medici in usum auditorum suorum tantum excerpta. Parisiis. M.DC.XXXIII”. Approbation and Privilege are both dated 1635.

¹⁰⁵ Read, “William Davidson,” 81 n. 31. The title is *Curriculum Chymiatricus nobilissima illa et exoptatissima Philosophice & Medicinæ parte pyrotechnica instructus*. It bears the date of 1634, in Paris, “at the author’s expense” (*Sumptibus Authoris*).

¹⁰⁶ Davisson, *Philosophia pyrotechnica*, Part 2, end of chap. X, esp. 286–88.

with *scientia*, “are the source of activity and organise the confused mass of atoms”, which have “no activity and powers in themselves.”¹⁰⁷ It is unclear whether Davison’s lectures focused on the most practical aspects of chymistry, covered by parts 3 and 4 of his work, or further developed his own theoretical ideas.

One of the students of Guy de La Brosse at the Jardin Royal, in 1641, was Annibal Barlet.¹⁰⁸ Three years later, the manuscript of a *Cours de chimie* was copied with this indication: *Cours de chimie, par Mons^r Berlet, l’an M.VI^e quarante-quatre*.¹⁰⁹ Two years later (1646), John Evelyn attended the course of Barlet in Paris: he said later that his first course of chymistry was under “his master” Barlet.¹¹⁰ Finally, in 1650, Barlet obtained the privilege for his textbook *Le Vray et methodique cours de la physique resolutive, vulgairement dite chymie*, which was published three years later. The privilege was easily granted to Barlet, “especially considering his long-time service to the public by demonstrating the aforesaid *Physique resolutive* not only in several places in France, but even in our *Collège Royal, or de Cambrai*, also called ‘of the Three Bishops’.”¹¹¹ Thus, Barlet had extensive experience of teaching chymistry, not only in Paris, but in other French cities as well. Clearly, the offer of chymical courses had dramatically increased in France over the years, especially in Paris, since the 1630s.

Barlet’s book was distributed by the publisher, but also by the author at the same college of Paris where he taught.¹¹² The mention of “*Collège Royal, or de Cambrai*” must not lead us

¹⁰⁷ Antonio Clericuzio, *Elements, Principles and Corpuscles: A Study of Atomism and Chemistry in the Seventeenth Century* (Dordrecht-Boston: Kluwer, 2000), 61–63; Davison, *Philosophia pyrotechnica*, Part 2, chaps. XIV–XV, 342–92. On Davison and Severinus, see Jole Shackelford, *A Philosophical Path for Paracelsian Medicine. The Ideas, Intellectual Context, and Influence of Petrus Severinus (1540/2-1602)* (Copenhagen: Museum Tusulanum Press, 2004). On other aspects of Davison’s philosophy, see also Jean-Pierre Brach, “Deux exemples de symbolisme géométrique dans des textes alchimiques du XVII^e siècle,” in *Alchimie: art, histoire et mythes*, ed. Didier Kahn and Sylvain Matton (Paris-Milano: SEHA-Archè, 1995), 718–34. On Severinus and *semina rerum*, see Hiro Hirai, *Le Concept de semence dans les théories de la matière à la Renaissance: de Marsile Ficin à Pierre Gassendi* (Turnhout: Brepols, 2005), 217–65.

¹⁰⁸ La Brosse, *Catalogue des Plantes*, 1: “Anibal Barlet Dauphinois, estud. en Chimie.” In 1621 the Parliament of Grenoble granted a printer, Pierre Verdier, permission to resume his prosecution of Claude Barlet and his brother Annibal Barlet. See Jean-Joseph-Antoine Pilot-Dethorey (also: Pilot de Thorey), *Inventaire-sommaire des archives départementales antérieures à 1790 [...] Isère. Archives civiles. Séries A et B*, vol. I (Grenoble: F. Allier, 1864), 69a, shelfmark B 554. Further research is needed. On Barlet (dates unknown), see Jean-Pierre Brach, “Les analogies fondatrices entre ‘chymie’, géométrie et cosmogonie dans le *Vray et methodique Cours de la Physique resolutive* (1653) d’Annibal Barlet,” *Chrysopaëia* 7 (2000–2003): 327–42.

¹⁰⁹ Rouen, Bibliothèque municipale (actually Bibliothèque patrimoniale Villon), MS 952 (I. 71).

¹¹⁰ John Evelyn, *The Letterbooks of John Evelyn*, ed. Douglas D. C. Chambers and David Galbraith (Toronto: University of Toronto Press, 2014), 105. See also F. Sherwood Taylor, “The Chemical Studies of John Evelyn,” *Annals of Science* 8 (1952): 285–92.

¹¹¹ Which places are meant aside from Paris is unknown. Grenoble? Rouen, where a MS of his course is preserved (as we saw)? See Annibal Barlet, *Le Vray et methodique cours de la physique resolutive, vulgairement dite chymie* (Paris: N. Charles, 1653), Privilege, sig. [ã iiij]recto, dated 1650 (already quoted by Brach, “Les analogies fondatrices,” 327 n. 2): “[...] en considération du service qu’il [i.e. Barlet] a rendu depuis longtemps, et rend au public, en la démonstration qu’il fait annuellement de ladite Physique Résolutive, non seulement en plusieurs lieux de France, mais encore en notre Collège Royal dict de Cambrai ou des trois Evesques de notre bonne ville de Paris [...]”

¹¹² The title-page mentions: “A Paris, Chez N. Charles, proche saint Hilaire, & se distribuë par l’Auteur, au College des trois Evesques.”

to mistake it for the prestigious *Collège Royal*, better known today as the *Collège de France*, of which Barlet never was a member (contrary to what we sometimes read in old accounts such as the *Encyclopédie méthodique*).¹¹³ He was probably only a teacher at the *Collège de Cambrai*, addressing mostly students from the Faculty of arts. What did he teach? Presumably he was better in front of students than writing at his desk: his textbook stands out as exceptionally verbose, unclear and tedious. Compared to him, even Davisson, talkative writer as he was, would appear rather Spartan. Barlet loved to find out endless subdivisions in nature. His opinion on the natural principles was that there were not three principles (like Beguin), nor four elements, or five (like de Clave), or seven (like Davisson), but eight: the four elements, the *tria prima*, and *armoniac*, which he added in order to respond to the element of fire.¹¹⁴

Conclusions

The very first courses of chymistry in Early Modern France (or rather medical chymistry, or chymical pharmacology) were probably those given by Pierre Paulmier (1596–1597) and Théodore Turquet de Mayerne (1597–1603) within the Parisian medical Faculty. At roughly the same time, it is very likely that similar courses were taught at the Protestant Academy of Sedan, possibly by Jean Beguin or the Duke of Bullion's apothecary, Nicolas Bonne. Furthermore, Mayerne seems to have given such courses at Sedan in the 1620s.

Returning to Paris, the courses by Jean Beguin probably began in 1608 or a few months earlier. Beguin's matter theory, influenced by Joseph Du Chesne, presented the three Paracelsian chymical principles as enclosed within two passive bodies: water and earth (*not* considered elements).

Beguin died around 1618. Étienne de Clave began teaching in Paris before 1624 (but where exactly, is not known). From 1624 onward, he taught a matter theory based on five incorruptible principles: mercury, sulphur, salt, water and earth. After his condemnation in 1624, he went into exile possibly at Rennes (Brittany), but was back in Paris in 1627 and

¹¹³ Part of the Collège de Cambrai (founded by two bishops and an archbishop in the fourteenth century) was bought by the Crown in the early seventeenth century to provide a place for the Collège royal. The Collège de Cambrai properly said remained, however, one of the colleges of the University of Paris, despite its alternative name of "Collège royal." Barlet never appears in the thorough survey by Claude Pierre Goujet, *Memoire historique & litteraire sur le College Royal de France* (Paris: A.-M. Lottin, 1758, 3 vols.).

¹¹⁴ Barlet, *Le Vray et methodique cours*, 59. On *armoniac*, see 53–57.

resumed his courses at an unknown date and place, certainly before 1630. We do not know when he left Paris (possibly before 1636).¹¹⁵

His brother Jacques de Clave in 1627 became the first professor of theoretical and practical chymistry at an Italian university (Mantua), and the only one before 1737. Others actually taught chymistry before him in Italy, but not holding a plain, formally appointed academic chair of chymistry. Jacques de Clave even taught chymistry for one year in Padua University before 1628, although we do not know his status in that position. Not a single writing by him is known, although some are perhaps preserved in Italian archives.

Probably in 1628 or shortly after, Étienne de Clave also taught chymistry in Italy at the court of the Duke of Urbino. His two *Meditations* on opium and vinegar are testaments to his teaching there. Additional, still undiscovered, *Meditations* by Étienne de Clave may be contained in Italian archives.

As early as 1625, Guy de La Brosse pleaded for the establishment of chymical teaching at the newly founded *Jardin royal*. He was probably the one teaching chymistry there in 1640–1641 to eight students (including Annibal Barlet).

William Davisson taught chymistry in Paris from at least 1633. The location, however, is unknown. His matter theory was a combination of the *tria prima* and the four elements, all composed of different atoms activated and organised by the *semina rerum*.

Did Davisson teach only after Étienne de Clave quit teaching, or did both men give courses at the same time? Again, we cannot answer this. His title of “Royal Professor of Chymistry” at the *Jardin Royal* (1647 or 1648) can be traced in contemporary (even if not in State archival) records. This title, however, was not formally, systematically used at the *Jardin Royal* before E. F. Geoffroy (1712).

Annibal Barlet, a former student in chymistry of Guy de La Brosse (1641), gave courses of chymistry from at least 1644 in several French cities, and especially to students of the *Faculté des arts* within the *Collège de Cambrai*, i.e. within the University of Paris. In his matter theory the four elements matched the *tria prima* combined with what he termed *armoniac* (a principle added by him to correspond to the element of fire).

There were, then, a handful of both private and public courses in chymistry in Paris between 1630 and 1650: Étienne de Clave, Davisson and La Brosse were probably teaching almost simultaneously; later on, it was still the case with Davisson, Barlet and Nicaise Le Febvre (ca. 1610–1669). Le Febvre’s *Traité de la Chymie* was not published until 1660, but

¹¹⁵ See above, n. 84.

John Evelyn began a new course in Paris under “the famous Monsieur Le Febvre” as early as January 1647 (meaning that Le Febvre *was* already famous in 1647).¹¹⁶ Although Davisson was the first to receive the official title of *Professeur du Roy en Chymie*, he was *not* the first to officially give *public* lectures in chymistry, contrary to the commonly accepted version of events. Before him Guy de La Brosse obviously taught chymistry at the Garden, even if his official teaching position was “demonstrator of the exterior of plants.” Otherwise how could La Brosse have mentioned students in chymistry among his enrolled audience?

Finding a course of chymistry in Paris was easy in the mid-seventeenth century. This may be worth considering with regard to the infamous *Affaire des Poisons*, which really began in the early 1660s and involved widely-disseminated chymical practices.¹¹⁷

ACKNOWLEDGEMENTS

I have greatly benefited from criticism by a referee, and by Ute Frietsch. I warmly thank them both. I am also very grateful to Bruce Moran, who did a wonderful job in transmuting my jargon into readable English.

NOTE ON CONTRIBUTOR

Didier Kahn is senior researcher at the CNRS, Cellf 16–18 (a unit based in Paris, Sorbonne University). He is the author of *Alchimie et paracelsisme en France à la fin de la Renaissance* (Droz, 2007) and *Le Fixe et le volatil: chimie et alchimie, de Paracelse à Lavoisier* (CNRS Editions, 2016). He published in 2010 an extensive annotated edition of Montfaucon de Villars’s *Le Comte de Gabalis, ou Entretiens sur les sciences secrètes* (1670), and in 2015 *La Messe alchimique attribuée à Melchior de Sibiu*. He has recently completed the first volume of the critical and annotated edition of Diderot’s *Correspondence* (vol. XXVIII of Diderot’s *Œuvres complètes*, in collaboration, Paris: Hermann, forthcoming). He has guest-edited with Hiro Hirai two special issues on Paracelsus in *Early Science and Medicine* (2019) and *Ambix* (2020).

¹¹⁶ Taylor, “The Chemical Studies,” 286.

¹¹⁷ See some primary sources in Gisèle Chautant, *Croyances et conduites magiques dans la France du XVII^e siècle d’après l’Affaire des poisons* (Lille: Atelier national de reproduction des thèses, 1998), 123–24, 159–62, and my overview in Henry de Montfaucon de Villars, *Le Comte de Gabalis ou Entretiens sur les sciences secrètes* (Paris: Champion, 2010), 44 and 79–81.