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Graeco-Egyptian Alchemy in Byzantium

The main concern of this paper will be with the problems raised by the reception of ancient alchemy in Byzantium. After a brief introduction, I will start from the study of a pre-Byzantine author, Zosimos of Panopolis, and deal with the following questions : How, from a purely material viewpoint, were Zosimos' writings handed down during the Byzantine period? Did Byzantine alchemists have access to his works and did they resort to them? Was Zosimos known outside the alchemical Corpus; in other words, did Graeco-Egyptian alchemists exert any kind of influence outside strictly alchemical circles? When and how was the alchemical Corpus put together? In a more general way, what evidence do we have, whether in the Corpus itself or in non-alchemical literature, that alchemy was practised in Byzantium? Answers (or at least partial answers) to these questions should help us to understand and define to some extent the place held by the 'sacred art' in Byzantium.

INTRODUCTION

It is now usually accepted that alchemy came into being in Graeco-Roman Egypt around the beginning of our era and that it originated from the combination of several factors, the most remarkable of which are (1) the practices of Egyptian goldsmiths and workers in metals who experimented with alloys and knew how to dye metals in order to simulate gold; (2) the theory about the fundamental unity of matter, according to which all substances are composed of a primitive matter and owe their specific differences to the presence of different qualities imposed upon this matter; (3) the idea that the aim of any technique must be the *mimesis* of nature ; (4) the doctrine of universal sympathy, which held that all elements of the cosmos are connected by occult links of sympathy and antipathy which explain all the combinations and separations of the bodies. The encounter of these different trends of thought brought about the idea that transmutation ought to be possible, all the more so with the addition of mystical daydreams influenced by gnostic and hermetic currents and favoured by the decline of Greek rationalism.¹

The texts about Graeco-Egyptian alchemy that have come down to us are, in the first place, two collections on papyrus, which date back to about 300 A.D. and contain a series of recipes for imitating gold, silver, precious stones and purple dye;² I will not dwell on

¹On the origins and development of Graeco-Egyptian alchemy, see A. J. Festugière, *La révélation d'Hermès Trismégiste*, I, *L'astrologie et les sciences occultes*, 2nd ed. (Paris, 1950), 217–40; R. Halleux, *Les textes alchimiques*, Typologie des Sources du Moyen Age occidental 32 (Turnhout, 1979), 60–64; idem, 'Alchemy', in *The Oxford Classical Dictionary*, ed. S. Hornblower and A. Spawforth, 3rd rev. ed. (Oxford and New York, 2003), 52–3; *ODB* s.v. ALCHEMY (by D. Pingree and A. Cutler); C. Viano, 'Alchimistes gréco-égyptiens', in *Dictionnaire des Philosophes*, ed. D. Huisman, 2nd ed. (Paris, 1993), 52–5, and eadem, 'Alchimie gréco-alexandrine', in *Dictionnaire critique de l'ésotérisme*, ed. J. Servier (Paris, 1998), 52–5.

²Both papyri were edited and translated in *Papyrus de Leyde. Papyrus de Stockholm. Fragments de recettes*, ed. R. Halleux, *Les alchimistes grecs*, I (Paris, 1981).

them because they were not known to the Byzantines.

Next, a body of texts generally referred to as the ‘alchemical Corpus’, handed down by a large number of medieval manuscripts, among which three principal witnesses can be distinguished:³

1. MS *Marcianus graecus* 299 (M), which, according to its handwriting, probably dates from the end of the tenth or the beginning of the eleventh century;
2. MS *Parisinus graecus* 2325 (B), of the thirteenth century;
3. MS *Parisinus graecus* 2327 (A), copied in 1478.⁴

These three manuscripts differ from one another by the number of texts they contain, by the organization of these texts and by their state of preservation. Manuscript M is the most beautiful of our alchemical manuscripts; the title of the first piece in it is inscribed in a *pyle*, a magnificently decorated frame painted in four colours, and the manuscript contains lavish illustrations;⁵ unfortunately, it was the victim of several accidents: it lost several quires and some of those that remain were inverted by the binder. On the other hand, it begins with a table of contents which corresponds only partially to its present content, but which is in fact that of the manuscript before its various misfortunes.⁶ Compared with M, B presents some

³ Perhaps four, if one takes into account MS *Laurentianus graecus* 86.16 (L), copied in 1492; but it is not clear whether this manuscript is a copy of *Paris. gr.* 2327, or if both of them are gemelli: see the remarks in the introduction to *Zosime de Panopolis, Mémoires authentiques*, ed. M. Mertens. Les alchimistes grecs, IV.1 (Paris, 1995), XLII, and C. Viano, ‘Olympiodore l’alchimiste et les présocratiques: Une doxographie de l’unité (*De arte sacra*, § 18–27)’, in D. Kahn and S. Matton, eds. *Alchimie: Art, histoire et mythes. Actes du 1^{er} colloque international de la Société d’Étude de l’Histoire de l’Alchimie* (Paris, Collège de France, 14–15–16 mars 1991) (Paris – Milan, 1995), 95–150, esp. 137.

⁴ On these three manuscripts, from which all the others seem to derive, see *Zosime de Panopolis*, ed. Mertens, XXI–XXXVIII.

⁵ See, e.g., ‘Cleopatra’s goldmaking’ (M, fol. 188v), reprod. in M. Berthelot, *Les origines de l’alchimie* (Paris, 1885), pl. I (= *Zosime de Panopolis*, ed. Mertens, 241, pl. II).

⁶ See the convincing demonstration by H. D. Saffrey, ‘Historique et description du manuscrit alchimique de Venise *Marcianus Graecus* 299’, in *Alchimie* (cited

important omissions; indeed, it looks as if the copyist of B was more interested in the technical content than in the philosophical and doctrinal texts, and that he organized the materials to make them into a workshop handbook. As for A, it encloses a larger collection than the first two manuscripts; it contains a number of texts that are peculiar to it and whose origin is unknown. Lastly, it is worth noting that the relations between those three manuscripts have not yet been conclusively clarified even though they were often and widely discussed.⁷

As far as the content of the Corpus is concerned, it includes writings of extremely varied periods ranging from the beginning of our era to the fifteenth century, the chronology of which is very difficult to establish. Three levels are usually distinguished. To the oldest one belong the works of a Pseudo-Demokritos, as well as a long series of quotations or of short treatises placed under the names of prestigious authors whether historical or mythical like Hermes, Agathodaimon, Isis, Cleopatra, Mary the Jewess, Ostanes, Pammenes, which seem to have been written between the first and the third century. The second coincides with Zosimos of Panopolis, who may be said to have raised alchemy to its highest degree; with him, alchemy appears as a subtle mixture of technical preoccupations and mystical religion. The third and last level is made up of the so-called exegetes, the most famous of whom are Synesios (4th c.), Olympiodoros (6th c.), Stephanos of Alexandria

above, note 3), 1–10, esp. 4. J. Letrouit is of the opposed opinion in ‘Hermétisme et alchimie: contribution à l’étude du Marcianus Graecus 299 (=M)’, in C. Gilly and C. van Heertum, eds. *Magia, alchimia, scienza dal ‘400 al ‘700: l’influsso di Ermete Trismegisto* (Florence, 2002, 2nd ed. 2005), I, 85–104, esp. 85–7: he curtly rejects Saffrey’s analysis, but he does not propose anything satisfying instead. I wish to thank my anonymous reviewer for bringing the article to my attention.

⁷ See bibliography in *Zosime de Panopolis*, ed. Mertens, XLIII, n. 96. I do not personally believe in a direct dependence. Cf. Viano, ‘Olympiodore l’alchimiste et les présocratiques’, 137, on the relations between M and A: “ces deux manuscrits sont très probablement indépendants”. On the other hand, J. Letrouit (“Chronologie des alchimistes grecs”, in *Alchimie* [cited above, note 3], 11–93, esp. 11) seems to have become certain that B and A derive from M and announces (in 1995) that his demonstration will soon be published, which, to my knowledge, has not yet happened in 2005; no allusion to this question can be found in Letrouit’s recent contribution on the *Marcianus* (cited above, note 6).

(7th c.), further a commentator known as the Christian (7th or 8th c.), and another one called the Anonymous Philosopher, perhaps a little later. To the same period as Stephanos of Alexandria also belong four alchemical poems ascribed to Heliodoros, Theophrastos, Hierotheos and Archelaos. The alchemical tradition continues in Byzantium with Michael Psellos (11th c.) and Kosmas the Monk (11th c. or later)⁸ as well as Nikephoros Blemmydes (13th c.).

1. THE TRANSMISSION OF ZOSIMOS OF PANOPOLIS' WRITINGS DURING THE BYZANTINE PERIOD

I will deal in the first place with the transmission of the texts and discuss as an example the case of Zosimos of Panopolis, whose manuscript tradition is a beautiful illustration of the difficulties raised by the editing of alchemical texts. Zosimos must have been active about the year 300 A.D.; as for the oldest manuscript that has come down to us, it might date from about 1000, which means that we must cope with a gap of seven centuries of subterranean transmission, during which it is difficult to know what was happening.

Going through the three main manuscripts, I have spotted four groups of works that can be attributed to Zosimos with a fair degree of certainty. They are the *Authentic Memoirs*, the *Chapters to Eusebia*, the *Chapters to Theodore*, and the *Book of Sophe*, which, with the *Final Count*, makes up the last group. The four groups are not in all the manuscripts, and I will return to this. In fact, locating these groups is no easy task, for alchemical manuscripts constitute large collections in which the authors' texts are interwoven with one another, contrary to what is generally the case in classical Greek literature, in which the works of each writer are preserved in perfectly distinct manuscripts. The different parts of Zosimos' work are thus dispersed among the different manuscripts. Locating his writings in this entanglement is further complicated by the fact that the texts are copied one after the other without any gap and that the

⁸ A. J. Festugière, 'Alchymica', in idem, *Hermétisme et mystique païenne* (Paris, 1967), 205–29, esp. 221, and Halleux, *Les textes alchimiques*, 62, date Kosmas in the 11th century. Letrouit, 'Chronologie', 69, places him in the 14th–15th centuries.

manuscripts do not always distinguish between titles and subheadings. As a result, it is extremely difficult to see where each work begins and where it ends.

Let us now consider how Zosimos' writings appear in the manuscripts and what the specific problems raised by each group of works may be.

a. The Authentic Memoirs (Γνήσια ὑπομνήματα)

The title is suspect. The word ὑπομνήματα probably goes back to Zosimos himself because we know that he sometimes referred to his own writings by that name.⁹ Let us note that ὑπόμνημα may as well mean "preparatory notes", "first draft of a book" as "memoir" or even "commentary".¹⁰ Since it is not possible to determine the exact sense of the term in Zosimos, I opted for "memoir", which seemed to have a fairly wide import. As for the adjective that characterizes ὑπομνήματα, I think it was devised by a copyist or a compiler anxious to make it clear that he was reproducing Zosimos' "authentic" text without making any alterations to it. If this hypothesis is correct, we will see that this good intention was not always carried out, far from it.

The *Authentic Memoirs* consist of a series of thirteen opuscles. They contain an introductory text entitled *On the Letter Omega*, in which Zosimos deals principally with the opposition between the body and the intellect, as well as with the means of freeing oneself from the baleful influence of Fate. Several sections of the *Authentic Memoirs* treat the technical apparatus, while others discuss a puzzling substance called "divine water", which seems to play an essential role in transmutation. Three of the thirteen opuscles are known as Zosimos' 'Visions': the alchemical operations are ritualized into symbolic expressions of torture, of death and of

⁹ See *Zosime de Panopolis*, ed. Mertens, XLVIII.

¹⁰ See R. Devreesse, *Introduction à l'étude des manuscrits grecs* (Paris, 1954), 76–8; cf. J.-M. Mandosio, 'Commentaire alchimique et commentaire philosophique', in M.-O. Goulet-Cazé, ed. *Le commentaire: Entre tradition et innovation. Actes du colloque international de l'Institut des traditions textuelles (Paris et Villejuif, 22–25 septembre 1999)* (Paris, 2000), 481–90, esp. 481, n. 1.

resurrection; the alchemical utensils become temples and altars whereas base metals are represented as human beings who must be sacrificed before they are brought back to life in the shape of noble metals.

The *Authentic Memoirs* are to be found, partly at least, in each of the three main manuscripts. But not all the texts are taken up in all the manuscripts. For instance, *On the Letter Omega* appears only in the *Marcianus*, whereas the second and third so-called 'Visions' are present only in *Parisinus A*. Some texts have come down to us in remarkably good condition, as is the case, for instance, with the treatise *On the Letter Omega*. Others, on the contrary, survive in an appalling state of preservation, considerably damaged by transmission and victims of the manipulation by compilers. Several pieces have manifestly been abridged, sometimes in a drastic way. Moreover, the *Marcianus* has the characteristic feature of including some of the texts of the *Authentic Memoirs* in two distinct versions, which sometimes diverge from each other considerably. Occasionally, the two versions are abridged in different ways and complement each other; at other times one of the two contains a passage that cannot be found in the other, or vice versa. In some instances the wording is almost identical in both texts. The most striking feature is that the order of the pieces is not the same in the two versions. We also have the example of a piece which suddenly breaks off at the same place in both versions, probably following the inversion of some leaves in their common model, but which the copyists, feeling that something was missing, completed each in their own way, independently in the two versions.¹¹ It seems that the copyist of the *Marcianus* or one of his predecessors had at his disposal two recensions of writings by Zosimos which he transcribed one after the other, most of the time without noticing the common passages.¹²

¹¹ See *Zosime de Panopolis*, ed. Mertens, 141–22, n. 9.

¹² See *Zosime de Panopolis*, ed. Mertens, XLIX.

b. The Chapters to Eusebia¹³

Let us now examine the second group of texts attributable to Zosimos in the manuscripts, which, for the sake of brevity, I will call the *Chapters to Eusebia*. This title is itself problematic: the table of contents in the *Marcianus* gives the title as *By the Philosopher Zosimos, 35 Chapters to Eusebia on the Sacred and Divine Art*. In the body of the *Marcianus*, no title is given for the simple reason that the quire containing the title and the beginning of this work has disappeared. In manuscripts B and A, the title beginning this series of texts runs *By Zosimos of Panopolis, Authentic Writing on the Sacred and Divine Art of Making Gold and Silver*,¹⁴ according to a summary by chapters. Eusebia's name presents a problem, for it does not appear anywhere in Zosimos' writings. It may be either a corruption of "Theosebia", Zosimos' sister, whose name is well attested in his writings; or the name of a lady to whom a Byzantine compiler may have dedicated his work. This second hypothesis seems to me more plausible, since the expression "according to a summary by chapters" (κατ' ἐπιτομὴν κεφαλαιώδη) instantly reveals that the work has been tampered with. In fact, when closely scrutinized, these texts appear as a collection of extracts on various subjects. It seems that a compiler, starting from some of Zosimos' writings, took pains to collect some passages he thought interesting and gave them a title mostly made up of words found in the text itself. The compiler's interference is further betrayed by the occasional presence of quotations from writers later than Zosimos.

c. The Chapters to Theodore¹⁵

The third group of texts covers only a few folios and does not appear in *Parisinus* B. In A, it has no general title. According to the *Marcianus* however, there is no doubt that it must be attributed to

¹³ On the problems raised by this work, see *Zosime de Panopolis*, ed. Mertens, LIV-LX.

¹⁴ In fact, in this place, the manuscripts have the sign of mercury, not of silver, but it must be a matter of confusion of signs: cf. *Zosime de Panopolis*, ed. Mertens, LV, n. 141-43.

¹⁵ On the problems raised by this work, see *Zosime de Panopolis*, ed. Mertens, LX-LXV.

Zosimos: the table of contents in M announces: *By Zosimos, fifteen Chapters to Theodore*, a title we find again in the body of the manuscript.¹⁶ The name Theodore also poses a problem, for it is no more attested in Zosimos' works than Eusebia. However, the name "Theodore" appears on two more occasions in the alchemical Corpus: he is the author of the poem which, somehow, serves as a preface to the *Marcianus*;¹⁷ in addition, the manuscripts have transmitted a letter, inserted between the second and third lectures by Stephanos of Alexandria, which Stephanos addresses to someone called Theodore. Given that the name was extremely common in Byzantine times, it is impossible to decide whether one and the same person is meant in both instances, or two different personalities must be distinguished.¹⁸ Be that as it may, "Theodore" is probably the name of the person who applied to a compiler in order to obtain an abridged version of Zosimos, as is the case with the *Chapters to Eusebia* explained above.

As far as their content is concerned, these 'chapters' appear as a series of short paragraphs beginning, in most cases, with Περί τοῦ ὅτι "About the fact that...". In the best cases, a dozen lines of text are transmitted after the heading, though frequently the heading is all that has been preserved from the chapter. In its present state, this work appears as the summary of a summary. It is probable that the first compiler, using the method he had used for the *Chapters to Eusebia*, extracted from Zosimos' writings a number of passages to which he himself gave a title. A copyist or a later compiler may then have skipped the text of several chapters, keeping only the headings.

¹⁶ With the exception of no. 15.

¹⁷ See Saffrey, 'Historique', 8, who thinks that the author in question might be one of the younger brothers of emperor Heraclius.

¹⁸ According to Saffrey ('Historique', 8), the author of the preface must be the same as the dedicatee of Stephanos' letter, whereas according to Letrouit ('Chronologie', 68), the different persons named Theodore appearing in the Corpus must be imperatively distinguished from one another.

d. The Final Count and the Book of Sophe¹⁹

These two opuscles are neither in M, nor in B, but only in A; they belong to the texts that appear in the second part of *Parisinus A* and whose origin remains mysterious. They form a group inasmuch as the *Final Count* is sandwiched between the two preserved extracts of the *Book of Sophe*. *Parisinus A* was copied in Heraklion in 1478 by a Theodore Pelekanos originating from Corfu. On the other hand, it is well known that in the fifteenth and sixteenth centuries Crete was an important centre for copying and trading Greek manuscripts in general.²⁰ Here we have here an indication that, as far as alchemy is concerned, Crete also acted as an intermediary in handing down texts after the fall of Constantinople.

Such are Zosimos' writings handed down in the manuscripts. In order to form an idea of the proportion represented by the pieces preserved in relation to the total production of the Panopolitan, let us go through the indirect pieces of evidence available concerning this work:²¹

1. Zosimos himself occasionally alluded to some of his writings, including, among others, treatises entitled *Letter Omega*, *Manipulations*, *According to Action* and *Letter Kappa*. Only the *Letter Omega* has been partly preserved.

2. Later alchemists often cite Zosimos, whom they seem to hold in high esteem and of whom they speak most favourably. Among other appellations, they call him "the crown of philosophers", "the man whose language has the depth of the ocean", "the new soothsayer", "the god-inspired one" or again "the friend of truth". Among the works cited, we find *On divine Water* (partially preserved), *On Excellence* (partially preserved: it is the title that heads Zosimos' first 'Vision'), *Final Count* (partially preserved), *According to Action* (not preserved), *Letter Sigma* (not preserved), *The Book of Keys* (not otherwise attested).

¹⁹ On the problems raised by these works, see *Zosime de Panopolis*, ed. Mertens, LXV-IX.

²⁰ See, e.g., J. Irigoin, 'Les manuscrits grecs 1931-1960', *Lustrum* 7 (1962), 70.

²¹ On these indirect testimonies, see *Zosime de Panopolis*, ed. Mertens, LXXXVI-CI.

3. Lastly, the Byzantine monk George the Synkellos tells us that Zosimos might be the author of a work entitled *Imouth*, whereas the *Suda* knows Zosimos as the author of chemical writings dedicated to his sister Theosebia and divided into 28 books, each denoted by a letter of the alphabet and arranged in alphabetical order.

The problem is that if we start from the remaining opuscles and the various pieces of evidence I have just reviewed, it is extremely difficult to imagine Zosimos' work as a whole. The only source that seems to take into account Zosimos' complete production is the note in the *Suda*; it is likely that the treatise *On the Letter Omega*, which has been preserved, constituted the introduction to the *Book Omega*, one of the 28 books designated by letters the *Suda* refers to; the same for the books entitled *Letter Kappa* and *Letter Sigma*. As for the other titles preserved, it is impossible for us to estimate their relative importance: some of them are probably no more than headings of sections or of paragraphs, whereas others may correspond to complete books. We have the frustrating impression that we have in front of us only a few isolated pieces from an immense puzzle and are unable to picture the preserved pieces within the totality of the original work.²² What seems to be certain is that the hundred pages or so that have come down from Zosimos cut a sorry figure compared with his entire production, which must have been very wide. At least part of that production survived into the first centuries of the Byzantine period. After that begun its dismemberment, with the result that what remains now is only a few shreds. Zosimos really is a sad example of literary shipwreck.

2. ZOSIMOS' INFLUENCE ON LATER ALCHEMISTS

I now propose to examine whether Zosimos exerted any influence on Byzantine alchemy. Did Byzantine alchemists have access to his

²² The study of Zosimos' tradition in Syriac and Arabic may, perhaps, one day enlighten us by providing information on the states of the text earlier than what is preserved in MS *Marc. Gr.* 299; however, to my knowledge, this study is still in its early stages.

works and, if so, from what perspective did they read them?

I have just emphasized that Zosimos enjoyed immense prestige among alchemists of the third level who, manifestly, had for him the greatest respect. Four of these late alchemists deserve special attention: Olympiodoros, Stephanos, the Christian and the Anonymous Philosopher.

Olympiodoros must have lived in Alexandria in the sixth century A.D.²³ His identification with the homonymous Neoplatonic philosopher is extremely likely, even if it is not perfectly established. Olympiodoros is the author of a treatise preserved as part of the Corpus of Greek alchemists²⁴ which presents itself as a commentary on Zosimos' *Kat'energeian* (*According to Action?*);²⁵ it is, in fact, a collection of quotations from ancient alchemists accompanied by sentences devised by Olympiodoros, among which one finds extracts from Zosimos.²⁶ This commentary has a very complicated and discontinuous structure; its analysis is rendered even more difficult by the fact that it was probably meant to be read in connection with Zosimos' work, which is lost. The sentences commented on are arranged in an order which is difficult to follow, and it is often impossible to distinguish the sentence that is being

²³ Only Letrouit ('Chronologie', 56) sets him in the 4th century. On Olympiodoros, see the recent works of C. Viano: (a) 'Olympiodore l'Alchimiste', in *Dictionnaire des philosophes*, ed. D. Huisman, 2nd ed. (Paris, 1993), 2157–59; (b) 'Olympiodore l'alchimiste et les présocratiques' (cited above, note 3), esp. 99–102; (c) 'Quelques aspects théoriques et méthodologiques des commentaires alchimiques gréco-alexandrins', in *Le commentaire* (cited above, note 10), 455–64, esp. 457–58; (d) 'Le commentaire d'Olympiodore au livre IV des *Météorologiques* d'Aristote', in C. Viano, ed. *Aristoteles chemicus. Il IV libro dei Meteorologica nella tradizione antica e medievale*, International Aristotle Studies 1 (Sankt Augustin, 2002), 59–79, esp. 76–79.

²⁴ See *Collection des anciens alchimistes grecs*, ed. M. Berthelot and C. E. Ruelle, 3 vols. (Paris, 1888; repr. Osnabrück, 1967), II, 69,12–104,7 (Greek text) = III, 75–113 (translation).

²⁵ On the meaning of *energeia*, see Viano, 'Olympiodore l'Alchimiste', 2158, and 'Olympiodore l'alchimiste et les présocratiques', 133. On this title see also Letrouit, 'Chronologie', 33, who does not believe that Zosimos would have written a work entitled *Kat'energeian*.

²⁶ Among those extracts, one finds two passages of a work by Zosimos which is at least partly preserved under the title *Final Count*: see *Zosime de Panopolis*, ed. Mertens, LXVI–VII.

commented on from the commentary. Moreover, numerous interpolations and additions due to copyists can be detected. Nevertheless, it is possible to see that Olympiodoros aims, in this treatise, to show the relation existing, in his view, between presocratic philosophers and our alchemists. Among other things, Olympiodoros sketches a comparison between the doctrines on the unique principle espoused by presocratic philosophers and those held by the most important alchemists, including Zosimos, on the same subject; his intention is to bring out the view that the foundations of alchemy derive from Greek philosophy.²⁷

The next century, more particularly the reign of Heraclius, is marked by Stephanos of Alexandria, under whose name a series of lectures *On the Great and Sacred Art of Making Gold* has come down to us.²⁸ In addition, Stephanos of Alexandria is known as a commentator on Plato and Aristotle and as the author of astronomical works and medical treatises. As is the case with Olympiodoros, the identification of this Stephanos with our alchemist, though not absolutely certain, is quite probable.²⁹

²⁷ See Viano, 'Olympiodore l'Alchimiste', 2158.

²⁸ On Stephanos of Alexandria, see particularly the paper of M. K. Papathanassiou, 'Stephanos of Alexandria as Alchemist and Astrologer' in the present volume. See also eadem, 'Stephanos of Alexandria: Pharmaceutical Notions and Cosmology in his Alchemical Work', *Ambix* 37.3 (1990), 121–33; 38.2 (1991), 112 (Addenda and corrigenda); eadem, 'Stephanos of Alexandria: On the Structure and Date of his Alchemical Work', *Medicina nei secoli* 8.2 (1996), 247–66, and Viano, 'Quelques aspects théoriques', esp. 458–60. To be seen, too: M. K. Papathanassiou, 'Stephanos von Alexandria und sein alchemistisches Werk', Dissertation Humboldt Univ. (Berlin, 1992), as well as eadem, 'L'œuvre alchimique de Stéphane d'Alexandrie: structure et transformations de la matière, unité et pluralité, l'énigme des philosophes', in C. Viano, ed. *L'alchimie et ses racines philosophiques. La tradition grecque et la tradition arabe* (Paris, 2005), 113–33. The alchemical works of Stephanos were not included in *Collection des anciens alchimistes grecs*, ed. Berthelot and Ruelle, because they had already been published in *Physici et Medici Graeci minores*, ed. J. L. Ideler, II (Berlin, 1842; repr. Amsterdam, 1963), 199–253.

²⁹ Cf. Viano, 'Quelques aspects théoriques', 463: "En ce qui concerne Stéphane, les dernières études s'orientent de plus en plus vers l'hypothèse de l'identité". Letrouit, 'Chronologie', 60, expresses the opposite opinion and rejects categorically any identification: "Il n'y a aucune raison d'attribuer à Stéphane l'alchimiste ... des textes contemporains ou postérieurs transmis sous le nom d'un quelconque Stéphane ...".

Stephanos' alchemical work consists of a series of nine 'lectures' — but it is likely that there were originally only seven of them³⁰ — among which a letter to a certain Theodore was inserted, a text to which I will return. In these lectures one finds echoes from Zosimos who, however, is not cited by name in Stephanos. Another point worth noting: the last of the lectures is clearly dedicated to emperor Herakleios.

Two more commentators must be mentioned: those who are known as the 'Christian' and the 'Anonymous Philosopher', the latter name covering perhaps several characters.³¹ They are difficult to date; they must probably be situated between the seventh and the ninth centuries.³² In the absence of a suitable edition, it is difficult to form a clear idea about the writings of these writers;³³ they look like collections of quotations from ancient authors, particularly from Demokritos, Hermes, Mary, Agathodemon and Zosimos, grouped by subject and linked up by longer or shorter sentences of commentary;³⁴ as always, it is difficult to know where the quotations stop and where the commentaries begin. What is important for us is the manner in which the Christian and the Anonymous Philosopher quote the ancient alchemists, because it suggests that they still had their works, or at least long extracts from them, before their eyes.

³⁰ See indeed the new division proposed by M. K. Papathanassiou, 'Stephanus of Alexandria: On the Structure', 253–7.

³¹ Letrouit, 'Chronologie', 63–64, distinguishes two of them.

³² Letrouit ('Chronologie', 62–64) dates the Christian to the 7th–8th centuries and the two Anonymous to the 8th–9th centuries. Festugière (*La révélation*, I, 240) situates them all in the 7th century; Halleux, *Les textes alchimiques*, 62, places the Christian in the 6th century and the Anonymous in the 7th or 8th.

³³ M. Berthelot, in his effort to restore the original books of the ancient alchemists, was led to dismantle the compilations of the Christian and of the Anonymous Philosopher and to scatter their pieces in the different parts of his edition: see *Collection des anciens alchimistes grecs*, ed. Berthelot and Ruelle, III, 377–82. Letrouit, 'Chronologie', 62–64A proposed to reconstitute original sequences of the Christian and the Anonymous based on the *Marcianus*; however, Letrouit does not take into account certain texts by these authors that are transmitted only in manuscript A.

³⁴ For a brief analysis of these commentators, see Viano, 'Quelques aspects théoriques', 460–62.

Finally, it is worth pointing out that at least some of Zosimos' works seem to have been accessible in the eleventh century, because in the indictment brought by Michael Psellos against Patriarch Michael Keroularios when the latter fell into disgrace, the accuser alludes to our author's treatise *Kat'energeian*.³⁵ But this reference may simply mean that Psellos knew the *Marcianus*.³⁶

3. ZOSIMOS' CULTURAL INFLUENCE OUTSIDE STRICTLY ALCHEMICAL CIRCLES

We may now wonder whether Zosimos' works were known in Byzantium outside the circles of alchemists. The answer seems to be that they were.

In his *Bibliotheca*, Photios summarizes a mysterious work on apologetics written in Constantinople after the reign of Herakleios by an author whose name he does not know. That work gathered quotations from books of all provenances in favor of the Christian religion and—Photios writes—he even drew testimonies “from Zosimos' chemical writings”.³⁷ As I have already pointed out, George the Synkellos quotes Zosimos; the text he uses seems to have been more complete than the text we now have at our disposal and it is likely that he had access to the alchemical Corpus, because he also mentions Demokritos, Ostanes, Mary and Pammenes, who were authors of the first level.³⁸ Lastly, the *Suda* knows Zosimos, to whom it devotes an entry.³⁹ From these three testimonies, we may

³⁵ Michael Psellos, *Orationes forenses et acta*, I, ed. G. T. Dennis (Stuttgart and Leipzig, 1994), 97, l. 2673–75 = J. Bidez, *Catalogue des manuscrits alchimiques grecs* [hereafter *CMAG*], VI, *Michel Psellus* (Bruxelles, 1928), 76–77. Cf. J. Schamp, ‘Michel Psellos à la fin du ^{xx}^e siècle: État des éditions’, *L'Antiquité classique* 66 (1997), 353–69, esp. 367.

³⁶ See Bidez, *CMAG*, VI, 22.

³⁷ Photios, *Bibliotheca*, codex 170, p. 117a28 Bekker (ed. R. Henry, *Collectanea Byzantina*, II [Paris, 1960], 163). Cf. *Zosime de Panopolis*, ed. Mertens, xcvi–xcvii.

³⁸ George the Synkellos, *Chronographia*, ed. W. Dindorf, CSHB (Bonn, 1829), I, 471, 11–20 = George the Synkellos, *Georgii Syncelli ecloga chronographica*, ed. A. A. Mosshammer (Leipzig, 1984), 297, 23–298, 2; cf. *Zosime de Panopolis*, ed. Mertens, xciii–xcvi.

³⁹ *Suidae Lexicon*, ed. A. Adler, 5 vols. (Leipzig, 1928–38), s.v. Ζώσιμος (Z 168); cf. *Zosime de Panopolis*, ed. Mertens, xcvi.

infer that the alchemical Corpus must have had some diffusion in Byzantium between the seventh and eleventh centuries.

4. THE CONSTITUTION OF THE ALCHEMICAL CORPUS

The alchemical Corpus was put together during the Byzantine period. The building up of this set raises a number of questions that are worth reviewing briefly.

As far as the date is concerned, all historians of alchemy agree in situating it between the seventh and the early eleventh century;⁴⁰ the first corpus cannot be earlier than Stephanos, because some quotations from him were introduced into the works of the oldest alchemists.⁴¹ Therefore, Stephanos' lifetime must be considered the *terminus post quem* for the constitution of the Corpus; the eleventh century must be regarded as the *terminus ante quem*, because MS *Marc. Gr.* 299 includes most of the texts. It is quiet possible that some partial collections were already in existence in antiquity, as

⁴⁰ See, e.g., M. Berthelot, *Introduction à l'étude de la chimie des anciens et du moyen âge* (Paris, 1889; repr. 1938), 203: "Vers le VII^e ou le VIII^e siècle de notre ère s'est constituée une première collection, qui semble avoir été formée autour du commentaire de Stéphane, avec adjonction des auteurs de l'École Démocritaine et des premiers commentateurs. Cette collection ... aurait servi à constituer le prototype, duquel dérivent la vieille liste de Saint-Marc et le manuscrit de Saint-Marc. Cependant un certain nombre de mémoires d'auteurs renommés, de recettes partielles et plusieurs traités techniques n'étaient pas compris dans cette collection. Ils sont entrés plus tard dans d'autres collections, fondues avec la principale dans le manuscrit 2325, et depuis, avec des additions plus étendues, dans le manuscrit 2327"; idem, *Collection des anciens alchimistes grecs*, ed. Berthelot and Ruelle, I, VI: "Ce *Corpus* des Alchimistes grecs a été formé vers le VIII^e ou IX^e siècle de notre ère, à Constantinople, par des savants byzantins, de l'ordre de Photius et des compilateurs des 53 séries de Constantin Porphyrogénète, savants qui nous ont transmis sous des formes analogues les restes de la science grecque"; Festugière, *La révélation*, I, 240: "le *Corpus* lui-même des alchimistes grecs a probablement été achevé à la fin du VII^e siècle (vers 675–700), peut-être par Théodoros, disciple de Stéphane"; cf. idem, 'Alchymica', 211; Saffrey, 'Historique', 8: "nous croyons qu'il (sc. celui qui a rassemblé la collection de ces textes alchimiques) était un contemporain de Stéphane et du 'Chrétien'"; Letrouit, 'Chronologie', 68: "les textes alchimiques constituant M ont été rassemblés entre la seconde partie du IX^e siècle et la date de rédaction du manuscrit, à savoir le X^e-XI^e siècle".

⁴¹ See, e.g., *Collection des anciens alchimistes grecs*, ed. Berthelot and Ruelle, II, 173,1.

was the case with the Hippocratic Collection⁴² or with Plutarch's *Parallel Lives*,⁴³ especially since an alchemist like Zosimos clearly had at his disposal the writings of his predecessors; however, this argument does not seem strong enough to give us the right to postulate the existence of a collection from that time onwards.⁴⁴ As for knowing exactly what went on between the seventh and the eleventh century, we are reduced to making hypotheses. But several facts should be pointed out:

(a) A wide movement in favour of the study of alchemy seems to have marked the reign of Herakleios in the seventh century: he is indeed the emperor to whom Stephanos of Alexandria dedicated the last of his 'Lectures'; between the second and the third 'Lecture' by this author a letter addressed to a certain Theodore was inserted; the poem that serves as a preface to manuscript M is also the work of one Theodore. It was then assumed that the first corpus could be attributed to that Theodore, who may have been Stephanos' disciple.⁴⁵ Moreover, the table of contents in manuscript M mentions three alchemical writings of the emperor Herakleios himself, writings that must have been in a quire now lost.⁴⁶ To this may again be added that the Arabic alchemical tradition has kept the memory of Stephanos: the text known under the name of *Morienus* relates that prince Khālid ibn Yazīd ibn Mu'awiya was initiated into alchemy in Egypt between 675 and 700 by the monk

⁴² See on this subject J. Irigoin, 'Tradition manuscrite et histoire du texte: quelques problèmes relatifs à la Collection hippocratique', *Revue d'Histoire des Textes* 3 (1973), 1–13, esp. 8–9, and idem, 'L'Hippocrate du cardinal Bessarion (Marcianus graecus 269 [533])', in S. Bernardinello, ed. *Miscellanea Marciana di Studi Bessarionei* (Padua, 1976), 161–74, esp. 174.

⁴³ See J. Irigoin, 'La formation d'un corpus: un problème d'histoire des textes dans la tradition des *Vies parallèles* de Plutarque', *Revue d'Histoire des Textes* 12–13 (1982–3), 1–12, esp. 7.

⁴⁴ Berthelot is an advocate of this hypothesis: cf. his *Introduction*, 201: "Zosime semble avoir constitué, vers la fin du III^e siècle, une sorte d'encyclopédie chimique ..."; *ibid.*, 287: "Les traités des alchimistes gréco-égyptiens ont été réunis en collection, d'abord par Zosime au III^e siècle de notre ère, puis vers le VII^e siècle, au temps d'Héraclius".

⁴⁵ Cf. Festugière, cited above, note 40.

⁴⁶ On the loss, perhaps voluntary, of this quire, see Saffrey, 'Historique', 4.

Morienus (Marianos), a pupil of Stephanos of Alexandria.⁴⁷ The four alchemical poems that were transmitted under the names of Heliodoros, Theophrastos, Hierotheos and Archelaos are also dated to this period. It therefore seems undeniable that the sacred art enjoyed some sort of vogue in seventh-century Byzantium; consequently, it is not unreasonable to suggest that this was the time when one or several collections were put together and that they were the indirect source of our main manuscripts.

(b) Another remarkable feature is that the state of preservation of the texts is extremely variable from one manuscript to the other: for instance, some complete treatises are found next to abridged works, extracts, even extracts from extracts, and long commentaries enclosing, in the form of quotations, some chapters from an author's work. This seems to indicate that some texts must have become the victims of several successive reworkings at the hands of compilers.⁴⁸ The fact that manuscript M contains two differently ill-treated versions of Zosimos' *Authentic Memoirs* reveals, in my view, both the multiplicity of manipulations and the plurality of sources of the manuscript.

(c) Lastly, let us note that contemporary texts, particularly technical recipes,⁴⁹ were incorporated into these more or less reworked and more or less ancient works, a fact that bears witness to the liveliness of the Corpus.

In my opinion, these alchemical collections and compilations must be connected with the wide current of encyclopaedic interest which marked the ninth and tenth centuries in Byzantium and resulted in the constitution of innumerable other corpora of the same type: excerpts compiled on the order of Constantine Porphyrogennetos, the *Geoponika*, the Hippocratic Corpus, the *Hippiatrica*, of

⁴⁷ See on this subject Halleux, *Les textes alchimiques*, 65. Cf. idem, 'La réception de l'alchimie arabe en Occident', in R. Rashed, ed. *Histoire des Sciences arabes*, vol. 3, *Technologie, alchimie et sciences de la vie* (Paris, 1997), 143–54, esp. 146.

⁴⁸ Cf. P. Lemerle, *Le premier humanisme byzantin : Notes et remarques sur enseignement et culture à Byzance des origines au X^e siècle* (Paris, 1971), 299: "Cette pratique, générale à Byzance, des compilations qui s'enchaînent et s'emmêlent est bien faite pour décourager la recherche des sources".

⁴⁹ See below, note 62.

collection of the Greek tacticians, the Hermetic Corpus,⁵⁰ and many others, including the *Palatine Anthology*.⁵¹ The collection offered by manuscript M might represent the first outcome of such an activity. Afterwards, later texts as well as collections that had, at the beginning, remained independent also entered this alchemists' corpus.⁵² This is how we could explain, in my view, why manuscript A contains a long series of texts that do not appear in the two oldest manuscripts.⁵³

Another piece of information that could help us understand how the texts were selected and arranged would be to know the identity and motives of the compilers. The compilation of some works seems to have been commissioned. This could be the case with Zosimos' *Chapters to Eusebia* and *to Theodore*, Eusebia and Theodore being in this instance the silent partners of the compilation. Sometimes, we are even under the impression that the compiler did not

⁵⁰ See A. J. Festugière, 'L'Hermétisme', in idem, *Hermétisme et mystique païenne* (cited above, note 8), 28–87, esp. 33, about the Hermetic Corpus: "Le premier témoignage que nous ayons sur le Corpus actuel est de Psellos au XI^e siècle. On peut donc conjecturer ou bien que le Corpus a été compilé entre le VI^e et le XI^e siècle comme d'autres collections analogues (en particulier le Corpus des alchimistes grecs) ou bien qu'il est dû à Psellos lui-même qui aura voulu sauver ainsi les restes dispersés de la littérature hermétique savante". Cf. J.-P. Mahé, *Hermès en Haute-Égypte*, II (Quebec, 1982), 19.

⁵¹ On this trend, see Lemerle, *Le premier humanisme*, 267–300; idem, 'L'encyclopédisme à Byzance à l'apogée de l'Empire, et particulièrement sous Constantin VII Porphyrogénète', *Cahiers d'histoire médiévale* 9.3 (1966), 596–616; A. Dain, 'L'encyclopédisme de Constantin Porphyrogénète', *Lettres d'Humanité* XII (= *BullBudé* 1953.4), 64–81.

⁵² Let us quote, e.g., the letter of Psellos, which opens manuscript A (fol. 1r–7r), or the anonymous and untitled text also handed down by A (fol. 227r–229v), which can be dated to around the 12th century; on this last text, see A. Colinet, 'Le Travail des quatre éléments ou lorsqu'un alchimiste byzantin s'inspire de Jabir', in I. Draelants, A. Tihon, B. van den Abeele, eds. *Occident et Proche-Orient: Contacts scientifiques au temps des Croisades (Actes du colloque de Louvain-la-Neuve, 24 et 25 mars 1997)* (Turnhout, 2000), 165–90.

⁵³ Some of those texts are very old, for instance, *Isis' letter to Horus* (A, fol. 256r–258r), which can be dated to the 2nd or 3rd century A.D. (see M. Mertens, 'Une scène d'initiation alchimique: La Lettre d'Isis à Horus', *Revue de l'histoire des religions* 205 [1988], 3–23). Letrouit, 'Chronologie', 82 and 88, dates this work wrongly, in my opinion, to the 7th–8th centuries on the basis of a quotation of Stephanos. This error is generated from the fact that Letrouit refuses to take manuscript A into consideration.

understand much of the text he was working on, particularly when he dealt with descriptions of technical appliances.⁵⁴ In other instances, the copyist seems to have been himself an alchemist. This is what we can deduce from the examination of manuscript B which, as I have already mentioned, looks very much like a workshop handbook: the copyist dropped the pieces that were too theoretical and did not interest him in favour of technical recipes which could be carried out at once. Similarly, manuscript A, riddled with spelling mistakes, seems to be the work of a practising alchemist.⁵⁵ As for the lavishly decorated manuscript M, H. D. Saffrey has voiced the hypothesis that it was made for a high-ranking person, perhaps even for the imperial library of Byzantium,⁵⁶ which would explain why M devotes more space to theoretical treatises.

Such is the complex tradition of the alchemical texts, which is due, in my opinion, to the methods of compilation employed by the Byzantines.

5. EVIDENCE FROM THE ALCHEMICAL CORPUS FOR THE PRACTICE OF ALCHEMY IN BYZANTIUM

Examining the alchemical Corpus reveals that the Byzantines did not content themselves with commenting on ancient texts. Their interest in the sacred art also finds expression in the production of alchemical writings, whether academic or practical.

For instance, Michael Psellos (11th c.) wrote in his youth a letter *On how to make gold*, which heads manuscript A;⁵⁷ but the recipes included in this letter seem to be extremely academic, therefore it is impossible to claim that Psellos devoted himself to the practice of

⁵⁴ A brief survey of the specific problems raised by the transmission of the pictures of appliances can be found in M. Mertens, 'L'illustration scientifique dans le Corpus alchimique grec', in M. Cacours et al., eds. *Formes et fonctions de l'image dans les traités de contenu scientifique de l'Antiquité et du Moyen Âge. Actes du colloque international de Strasbourg (3–4 novembre 2000)* (forthcoming).

⁵⁵ See on this subject Festugière, 'Alchymica', 221–5.

⁵⁶ See Saffrey, 'Historique', 2.

⁵⁷ Michael Psellos, Letter on *chrysopoeia*, ed. J. Bidez, *CMAG*, VI (Brussels, 1928), 1–47.

alchemy.⁵⁸ This opusculum nevertheless bears witness to Psellos' familiarity with the subject and shows that he believed in the theoretical possibility of transmutation, a logical consequence, he thought, of the laws governing the four elements.⁵⁹ The collections of recipes that passed down under the names of Kosmas the Monk⁶⁰ and Nikephoros Blemmydes⁶¹ also sound very academic, not tried out.

On the other hand, several practical recipes and technical treatises of Byzantine date can indeed be found among the texts of the Corpus;⁶² they deal, among other things, with the practices of silversmiths and goldsmiths, the tempering and dyeing of metals, glass-making, the colouring of precious stones, the manufacture of pearls and the making of moulds, and must obviously be connected with the luxury crafts of the time.⁶³

All this bears witness to the fact that alchemy was still cultivated in Byzantium.

6. SOME GLEANINGS FROM THE NON-ALCHEMICAL LITERATURE

If we turn to non-alechemical literature, we also find some indications along the same lines. I do not claim to be exhaustive but simply to present a few pieces of evidence drawn from non-

⁵⁸ Psellos, Letter on *chrysopoeia*, ed. Bidez, *CMAG*, VI, 93.

⁵⁹ See on this subject J. Grosdidier de Matons, 'Psellos et le monde de l'irrationnel', *Travaux et Mémoires* 6 (1976), 325–49, esp. 329–30.

⁶⁰ See *CMAG*, II, 442,1–446,14. Actually, the text edited by Berthelot and Ruelle under Kosmas' name appears to be composite. It is likely that only §§ 1–3 must be attributed to Kosmas; the recipes of §§ 4–8 are hardly altered extracts from Psellos' letter, as Bidez showed (*CMAG*, VI, 16), whereas §§ 9–11 present recipes written in a much more modern language. I want to express here my deep gratitude to A. Colinet for drawing my attention to the heterogeneous character of this treatise.

⁶¹ See *Collection des anciens alchimistes grecs*, ed. Berthelot and Ruelle, II, 452,1–459,9.

⁶² See the technical treatises edited in *Collection des anciens alchimistes grecs*, ed. Berthelot and Ruelle, II, 321–93.

⁶³ Cf. C. Delvoye, *L'art byzantin* (Paris, 1967), 187 (on enamel work): "Les progrès observés alors dans la fabrication des couleurs peuvent être mis en rapport avec les expériences de chimie et d'alchimie auxquelles aimaient à procéder les hommes de cette époque".

alchemical literature; these refer to alchemy as a contemporary reality and seem to me to reflect the place occupied by the ‘sacred art’ in Byzantine civilization.

There seems to be no extant Greek or Latin text mentioning alchemy before the end of the fifth century, which suggests that, before that date, it must have been relatively marginal.⁶⁴

The first non-alchemical text in which one finds a reference to alchemy is Proclus’ commentary on Plato’s *Republic*, composed about 500. Dealing with the Platonic theory of *mimesis*, Proclus shows that very often, the human mind does not do anything but imitate nature; he illustrates this by using the example of the alchemists, calling them “those who pretend to make gold from the mixture of certain species”.⁶⁵ It must be observed that although alchemy is familiar enough to be quoted as an example, it is looked upon as somewhat suspect.

At the same time, Aeneas of Gaza in his *Theophrastus* displays his knowledge of alchemy by establishing a parallel between the resurrection of the glorious bodies on the last day by the Creator’s art and the ennoblement of base metals transmuted into gold by the alchemist’s art: “the changing of matter into something better has nothing incredible about it, since with us too, those who know matter take silver and tin, remove appearance, melt together and color, ennoble matter and produce gold, even the most beautiful”.⁶⁶

In his *Chronicle*, John Malalas tells the story of an alchemist called John Isthmeos, who turned up at Antioch in 504, during the reign of

⁶⁴ See Halleux, *Les textes alchimiques*, 61.

⁶⁵ Proclus, *In Remp.*, ed. W. Kroll, *Procli Diadochi in Platonis rem publicam commentarii*, II (Leipzig, 1901), 234,17; tr. A. J. Festugière, Proclus, *Commentaire sur la république*, III (Paris, 1970), 189. See Halleux, *Les textes alchimiques*, n. 11. Cf. A. Segonds, ‘Proclus: astronomie et philosophie’, in J. Pépin and H. D. Saffrey, eds. *Proclus lecteur et interprète des Anciens. Actes du Colloque international du CNRS, Paris, 2–4 octobre 1985* (Paris, 1987), 319–34, esp. 333 and n. 51.

⁶⁶ Aeneas of Gaza, *Theophrastus*, ed. M. E. Colonna, *Enea di Gaza. Teofrasto* (Naples, 1958), 62,27–63,2; PG 85, col. 992A; J. F. Boissonade, *Aeneas Gazaeus et Zacharias Mitylenaeus* (Paris, 1836), 71, 2–7. Cf. Berthelot, *Les origines*, 74–76, and Halleux, *op.cit.*

Anastasios I. He tricked a lot of people and fled to Constantinople, where he swindled many silversmiths. The emperor had him arrested and exiled to Petra, where he died.⁶⁷

In the late eleventh century, in his poem entitled *Dioptra*, which is in the form of a dialogue between body and soul, Philip Monotropos resorts to a comparison with alchemy: just as an alchemist changes lead into gold, so Christ will change human nature.⁶⁸

The presence of alchemy is also reflected in the vocabulary: the terms of the word family of *χυμεία/χυμιά*⁶⁹ are frequently used in Byzantine texts.⁷⁰

⁶⁷ See John Malalas, *Chronographia*, XVI, ed. L. Dindorf, CSHB (Bonn, 1831), 395,6–19; ed. H. Thurn, CFHB 35 (Berlin and New York, 2000), 323; tr. E. Jeffreys et al., *The Chronicle of John Malalas: A Translation* (Melbourne, 1986), 222; this story is also taken up by other chroniclers: cf. Berthelot, *Les origines*, 76; Halleux, *Les textes alchimiques*, 62, n. 17; Letrouit, 'Chronologie', 56–7.

⁶⁸ See Philip Monotropos, *Dioptra*, ed. S. Lauriotes, in 'Ο Ἀθως, I, pts.1–2 (Athens, 1919–20), 134.

⁶⁹ Or *χημεία/χημιά*; late Greek references to alchemy vary between different spellings in which the phenomenon of iotacism prevents the original form from being discerned. On forms and etymology of the word alchemy, see Halleux, *Les textes alchimiques*, 45–7. Compounds in *χειμ-* are also found: cf. following note. As suggested by H. G. Liddell and R. Scott, *Greek-English Lexicon* (Oxford, 1996), s.v. *χυμεία*, it is very probable that the form with *υ* is the right one, for the Syriac tradition seems to have kept the form 'koumia', if we go by what M. Berthelot writes in *La chimie au Moyen Age*, II (Paris, 1893; repr. Osnabrück, 1967), 238. Now, the Greek texts must have been translated into Syriac before the shift of *υ* to *ι*, which must have started around the 8th/9th c. and ended around the 10th/11th c.: see G. Horrocks, *Greek: A History of the Language and its Speakers* (London and New York, 1997), 205; cf. R. Browning, *Medieval and Modern Greek* (London, 1969), 62; A. Mirambel, *Grammaire du grec moderne* (Paris, 1949), xv; H. Pernot, *D'Homère à nos jours: histoire, écriture, prononciation du grec* (Paris, 1921), 141; and S. B. Psaltes, *Grammatik der byzantinischen Chroniken* (Göttingen, 1913), § 226.

⁷⁰ In addition to *χημειυτής* meaning 'alchemist' in Malalas and derived chroniclers (above, note 67) and *χημειυτικὸς* qualifying Zosimos' writings in Photios and in the *Suda* (above, notes 37 and 39), *χύμειυσις* occurs among others in Tzetzes (*In Hes. scutum*, 122, ed. T. Gaisford, *Poetae minores Graeci*, II [Leipzig, 1823], 623, 25; cf. *Etymologicum Magnum* s.v. *ὀρεΐχαλκος*), *χείμειυσις* in Eustathios, *Ad A*

Lastly, in the first half of the fifteenth century, one comes across a passage in praise of alchemy in John Kanaboutzes' commentary on Dionysios of Halicarnassos.⁷¹ One can read in it that alchemy "may change the properties of metals and their substances into what it wills".⁷² The text probably reveals the influence of western alchemy on the Byzantine world,⁷³ but this is quite another story, which goes beyond the bounds of the present subject.

CONCLUSION

Before 500 A.D., alchemy appears to be a rather marginal activity, as suggested by the absence of evidence outside the alchemical Corpus. In the sixth century, references to alchemy become increasingly numerous in Byzantine literature, but some suspicion can be perceived with regard to the sacred art, a suspicion reinforced by the schemes of swindlers. From the seventh century onwards, alchemy seems to have been perfectly well integrated into the official learning, judging by the vogue it apparently enjoyed under Heraclius. The evidence of the *Marcianus* (10th or 11th c.), the sumptuous decoration of which suggests that it must have been made for a high-ranking person, points in the same direction.

The Byzantines showed their interest in alchemy in different ways:

1. They read the ancient texts, collected them, abridged or

25, ed. M. Van der Valk, *Eustathii archiepiscopi Thessalonicensis commentarii ad Homeri Iliadem pertinentes*, III (Leiden, 1979), 142, 6, and χεϊμευτὸς apparently meaning 'enamelled' in Constantine Porphyrogenetos, *De cerimoniis aulae Byzantinae*, II, 15, ed. J. J. Reiske, CSHB, I [Bonn, 1829], 581, 9–11, and passim; cf. Reiske's commentary, II [Bonn, 1830], 204–8). Research on χυμευ-/χεϊμευ- in the online edition of the *Thesaurus Linguae Graecae* (www.tlg.uci.edu) yields many more occurrences.

⁷¹ Cf. K. Krumbacher, *Geschichte der byzantinischen Literatur von Justinian bis zum Ende des oströmischen Reiches, 527–1453*, 2nd ed. (Munich, 1897), § 231.

⁷² See John Kanaboutzes, *Ad Principem Aeni et Samothracas in Dionysium Halicarnasensem Commentarius*, 13–14, ed. M. Lehnardt (Leipzig, 1890), 10, 26–12, 14, esp. 11, 7–9; cf. Letrouit, 'Chronologie', 69–7, who quotes the whole passage and provides a French translation.

⁷³ See Halleux, *ibid.*, 62, n. 21. On the influence of Latin alchemy on Byzantine alchemy, see also *L'anonyme de Zuretti*, ed. A. Colinet. *Les alchimistes grecs*, X (Paris, 2000), xiv.

summarized some of them; it is certain that the activity of the compilers contributed to salvaging part of these writings, but it is equally certain that their methods of working favoured the loss of the originals.⁷⁴ Zosimos' wreckage is a particularly striking illustration of this process. This fact is all the more regrettable as most of the ancient alchemical texts seem to have still been available around the ninth and tenth centuries.

2. The Byzantines wrote commentaries, sometimes with a fairly definite intention, as is the case with Olympiodoros, at other times simply with the aim of gathering extracts while confronting opinions of the ancients.

3. They also wrote original texts, whether theoretical or for practical use (recipes), which were gradually integrated into the existing corpus as the different collections were forming.

4. Last but not least, let us note that the alchemical texts seem to have spread widely beyond the strictly alchemical circles, since they can be traced in the writings of Photios and George the Synkellos, as well as in the *Suda*.

⁷⁴ Cf. Berthelot, *Introduction*, 300 (=Collection des anciens alchimistes grecs, ed. Berthelot and Ruelle, III, 381), "la compilation du Chrétien a été faite à l'origine en vertu du système général suivi par les Byzantins, du VIII^e au X^e siècle, période pendant laquelle ils ont tiré des anciens auteurs qu'ils avaient en main des extraits et résumés Ce procédé nous a conservé une multitude de débris de vieux textes ; mais il a concouru à nous faire perdre les ouvrages originaux"; cf. Dain, 'L'encyclopédisme' (cited above, note 51), 65: "l'immense travail fourni par Constantin Porphyrogénète et son équipe de chercheurs, au lieu d'assurer la conservation des textes anciens, contribua efficacement à leur destruction: le zèle qu'on avait mis à résumer et à adapter les textes avait rendu inutile la conservation des originaux"; cf. J. Irigoien, 'Survie et renouveau de la littérature antique à Constantinople (IX^e siècle)', *Cahiers de civilisation médiévale* 5.1 (1962), 287–302, esp. 297: "la production de nouvelles œuvres fondées sur les anciennes, comme le *Lexique* de Photius, a contribué à la disparition d'ouvrages estimés vieilliss ou dépassés; au siècle suivant, la constitution de vastes encyclopédies, comme les extraits d'historiens de Constantin Porphyrogénète, a rendu inutile, aux yeux des contemporains, la copie des ouvrages ainsi dépouillés". Cf. also G. Fowden, *The Egyptian Hermes: A Historical Approach to the Late Pagan Mind* (Cambridge, 1986), 2: "Had it not been for the vogue which alchemy and astrology continued to enjoy in Byzantium (and, indeed, meta-Byzantium), the texts would have been lost completely, having no claim to preservation on literary grounds".

The pieces of evidence surveyed above indicate that the place held by alchemy in Byzantine culture was in no way insignificant.