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## THE ALCHEMICAL WORKS OF STEPHANOS OF ALEXANDRIA.

TRANSLATION AND COMMENTARY by F. SHERWOOD TAYLOR, Ph.D., M.A., B.Sc.

## PART I.

The long and important alchemical treatise of Stephanos of Alexandria<sup>1</sup> has hitherto been inaccessible to the general reader, since it is not included in Berthelot's *Collection des Anciens Alchimistes Grecs*. The whole Greek text is printed only in the rare *Physici et Medici Græci Minores* of Ideler ; portions are contained in other yet rarer works (*v. infra*, p. 118). The present study of the alchemical work of Stephanos will include (1) Introduction, (2) the Greek texts from Ideler with variants from MS. Marcianus Græcus 299, (3) an English translation, (4) commentary, (5) bibliography.

## INTRODUCTION.

*Authenticity and Date of Text.*

The authorship of the alchemical texts which are attributed to Stephanos of Alexandria has raised several problems. Earlier scholars<sup>2</sup> identified Stephanos of Athens, a medical writer, with Stephanos of Alexandria : this cannot be regarded as a settled question. Medical works attributed to both these authors exist<sup>3, 4</sup>. Bussemaker<sup>4</sup> considers that the exclamatory and mystical style of the alchemical work is so different from the logical style of the medical works as to be regarded as emanating from a different hand. Dietz<sup>5</sup> is of the same opinion.

Stephanos of Alexandria was an historical personage and flourished under the Emperor Herakleios (610–641 A.D.). He is described<sup>6</sup> as a philosopher and public professor. He lectured on Plato and Aristotle and on the subjects of Geometry, Arithmetic, Astronomy and Music. He left a commentary on Aristotle and an astronomical work. In addition to these, the astrological text (*Ἀποτελεσματικὴ προγματεία*) and the alchemical works now in question have been ascribed to Stephanos of Alexandria, but have been held to be pseudepigraphical and of later date by Krumbacher<sup>6</sup> and also by Usener<sup>7</sup> and Kind<sup>3</sup>. The evidence for this view, as far as the alchemical works are concerned, is but slender. It is true that the style of the authentic works of Stephanos differs much from that of the alchemical treatise, but a declamatory and rhetorical style may have been thought appropriate to lectures upon a subject of arcane character : in any event such a style does not indicate a late date, for it is found throughout the Greek alchemical corpus. Kind<sup>3</sup>

regards the alchemical work as of the ninth century, but gives no new evidence for his contention<sup>8</sup>. Usener<sup>7</sup> regards the text as pseudepigraphical on the ground that a public professor teaching in the palace of Constantinople would not have dared to teach Alchemy, the practice of which had been forbidden by the edict of Diocletian. The proscription of Alchemy by Diocletian is supported by the rather slender positive evidence of Suidas and other authors writing at least 300 years after the event. It would seem incredible that the authors of the Greek alchemical texts should be ignorant of this edict, yet it is mentioned by none of them. Negative evidence must give way to positive, but a suspicion must remain as to the historicity of the incident. In any event, as Lippmann<sup>9</sup> has indicated, the edict of Diocletian, some three hundred years before the time of Stephanos, would have carried little or no weight with the learned Emperor Herakleios. The freedom of the alchemical treatise from terms of barbarous origin, such as are found in the latest Greek alchemical texts (*e. g.* that of Kosmas) and the neo-Platonic character of the mystical matter, favour a date before *c.* 700 A.D. The attribution to the well-known Stephanos is to some extent supported by the numerous allusions to mathematical, astronomical and musical matters with which he would be familiar. The alchemical works of Stephanos are cited<sup>10</sup> by the Anonymous Philosopher in a manner which implies that the work of the former author considerably antedates that of the latter, and though there is little evidence for the date of the Anonymous Philosopher we should certainly hesitate to place him as late as the ninth century.

In the absence of any positive evidence to the contrary there seems little reason to refuse to attribute the alchemical texts to the Stephanos of Alexandria who was public professor at the time of Herakleios, but none the less we must contemplate the possibility of the texts being as late as the beginning of the ninth century; they cannot be later, for the mention of the alchemical text by the *Kitab-al-Fihrist*<sup>11</sup> makes the date of the latter work (probably *c.* A.D. 850) the *terminus ad quem*.

#### *The Alchemical Works of Stephanos.*

The alchemical works of Stephanos consist of (1) a long treatise which is subdivided into nine *πράξεις* or lectures, the last of which has been said to be incomplete<sup>12</sup>, and (2) a Letter to Theodore which is interpolated between the second and third lectures.

The titles of these as given in Ideler's edition<sup>13</sup> may be translated as follows:—

- (1) Stephanos of Alexandria Universal philosopher and teacher of the great and sacred art. On the making of gold, Lecture I, with the help of God.
- (2) The same Stephanos, Lecture II, with the help of God. (Letter of the same Stephanos to Theodore.)

- (3) The same Stephanos, on the entire<sup>14</sup> world, Lecture III, with the help of God.
- (4) The same Stephanos on that which is in actuality, Lecture IV, with the help of God.
- (5) The same philosopher Stephanos upon that part of the divine art which is in actuality, Lecture V, with the help of God.
- (6) The same philosopher Stephanos, Lecture VI, with the help of God.
- (7) The same philosopher Stephanos, Lecture VII, with the help of God.
- (8) The same universal philosopher Stephanos, Lecture VIII, on the division<sup>15</sup> of the sacred art.
- (9) Teaching of the same philosopher Stephanos addressed to the Emperor Herakleios, Lecture IX, with the help of God.

*Manuscript, Editions and Translations.*

The Greek text appears in almost all the Greek alchemical MSS. The text of the treatise has been printed by Ideler in his *Physici et Medici Græci Minores* (Berolini, 1841), vol. ii, pp. 199–253. This text was edited by Dietz from the MSS. of Munich, which are copies of Marcianus Græcus 299, the oldest alchemical manuscript, hereafter referred to as M. The text is not an accurate copy of M. ; I have accordingly, through the courtesy of the Director of the Library of St. Mark, obtained photographs of M. and have noted the variants. Berthelot does not print the work of Stephanos in his *Collection des Anciens Alchimistes Grecs*. C. G. Gruner published in 1777 only the first lecture of Stephanos, in Greek and Latin<sup>16</sup>.

The work of Stephanos, together with those of Demokritos, Synesios, Pelagios and Psellos, was translated into Latin by Pizimenti. Parts of the translation have been several times reprinted (*v. infra*), but only in the Padua edition (1572–1573) does the portion of the work dealing with Stephanos appear.

The title of Pizimenti's work is: Democritvs Abderita De Arte Magna Sive de rebus naturalibus. Nec non Synesii, & Pelagii, & Stephani Alexandrini, & Michaelis Pselli in eundem commentaria. *Dominico Pizimentio Vibonensi Interprete*. Patavii apud Simonem Galignanum MDLXXIII. (Actually first published in 1572.)

This translation was made from the MS. Parisinus Græcus 2249, which is a copy of M. Pizimenti reproduces the sense of the text pretty closely, and the statement of Berthelot that the work is a paraphrase<sup>17</sup> rather than a translation is not fully justified. The obscurity of much of the Greek text made a free rendering necessary. The book is of extreme rarity, for only thirteen copies are known<sup>18</sup>. The translation of the works of Demokritos, Synesios and Pelagios, but not of those of Stephanos, has been reprinted several times<sup>19</sup>. Kopp<sup>2</sup> states that a few manuscript Latin translations of the latter are in existence.

*Character of the Alchemical Works of Stephanos.*

The work of Stephanos has been decried as rhetorical, as a patchwork etc., and the impression is conveyed that he has merely reproduced the work of older authors. Stephanos was certainly not a practical laboratory worker and his treatise embodies no new experimental results, but if we view it as a document in the history of Alchemy we must accord it high importance. In the first place the treatises of Stephanos and Olympiodoros are the only long and complete, or nearly complete, works on Greek Alchemy which have come down to us. Stephanos gives us a full exposition of the theory of Alchemy as it was understood in the seventh century A.D. He may not be an original writer, but comparatively little of his work is taken from extant alchemical texts. He is the first to avow that the art includes mental operations <sup>20</sup>.

The work of Stephanos seems to have been familiar to the Arabs, to whom he was known as Istafan, and as Adfar <sup>21</sup>; he is also mentioned in the *Kitab-al-Fihrist*. Berthelot states <sup>22</sup> that his language differs little from that of Geber, but although his style approaches that of the Arabs more nearly than does that of any other Greek author this is too strong a statement. It is not improbable, then, that this treatise may prove to be an important link between the Greek and Arab schools of alchemical thought.

The numerous mentions of Stephanos in later alchemical literature will be taken up in the bibliography which will follow the translation.

Στεφάνου Ἀλεξανδρέως οἰκουμενικοῦ φιλοσόφου καὶ διδασκάλου τῆς μεγάλης καὶ ἱερᾶς τέχνης<sup>1</sup>. Περὶ χρυσοποιίας Πρᾶξις σὺν θεῷ πρώτη.

Θεὸν τὸν πάντων ἀγαθῶν αἴτιον καὶ βασιλέα τῶν ὄλων, καὶ τὸν ἐξ αὐτοῦ πρὸ τῶν αἰώνων ἐκλάμψαντα μοιογενῆ υἱὸν σὺν τῷ ἀγῶ πνεύματι ὑμνήσαντες, καὶ τὸ τῆς αὐτοῦ γνώσεως λαμφθὲν ἡμῖν καθικετεύσαντες, τῆς ἐν χερσὶ πραγματίας, τοῦδε τοῦ συγγράμματος ἀπαρξώμεθα τὰ κάλλιστα δρέπεσθαι, καὶ τὰ ἀληθῆ ἀνιχνεύειν ἐπιστωσάμεθα. νυνὶ δὲ ἐκ τῆς ἀληθοῦς φυσικῆς θεωρίας κατασκευαστέον τὸ πρόβλημα· ὡ φύσις ὑπὲρ φύσιν νικῶσα τὰς φύσεις, ὡ φύσις ὑπὲρ αὐτὴν γινομένη οἰκονομηθεῖσα, ὑπεραίρουσα καὶ ὑπερβαίνουσα<sup>2</sup> τὰς φύσεις, ὡ φύσις μία καὶ ἡ αὐτὴ ἐξ αὐτῆς τὸ πᾶν φέρουσα καὶ ἀποπληροῦσα, ὡ ἔνωσις πληθυνομένη καὶ διῶκρισις ἡνωμένη, ὡ ἡ αὐτὴ καὶ οὐκ ἄλλη φύσις, ἐξ αὐτῆς τὸ πᾶν ἀποσώζουσα, ὡ ὕλη αἴλος τὴν ὕλην διακρατοῦσα, ὡ φύσις φύσιν νικῶσα καὶ τέρπουσα, ὡ φύσις οὐρανίην πνευματικὴν ἀποστίλβουσα ὑπαρξιν, ὡ ἀσώματον σῶμα, τὰ σώματα ἀσωματοποιοῦν, ὡ σελήνης διαδρομὴ πᾶσαν τὴν διακόσμησιν περιλύμπουσα, ὡ γενικώτατον εἶδος καὶ εἰδικώτατον γένος, ὡ φύσις ἀληθῶς ὑπὲρ φύσιν νικῶσα τὰς φύσεις, ποία φύσις εἶπέ, ἡ ἐξ αὐτῆς ἑαυτὴν οἰκείως αὐθις ἀσπαζομένη, ἦτοι ἡ τὸ ἄπυρρον φέρουσα θεῖον καὶ πυρίμαχον ἔχουσα τὸν τόνον, ἡ πολυώνυμος ἰδέα καὶ πολυείδος<sup>3</sup> ἐπωνυμία, ἡ ἔμπειρος φύσις τε καὶ ἐξύπλωσις, ἡ πολλύχρωμος ἐξανθίζουσα ἴρις, ἡ τὸ πᾶν ἐξ ἑαυτῆς ἀνακαλύπτουσα, ὡ φύσις ἡ αὐτὴ καὶ οὐκ ἐξ ἄλλης τὴν φύσιν διαφαίνουσα, ὡ ὅμοιον ἐξ ὁμοίου ἀναφαῖνον<sup>4</sup>, ὡ κεινίζουσα θάλασσα ποικιλοχρῶους<sup>5</sup> ἀναθυμουμένη μαργαρίτας, ὡ συλληψις τετρασωμίας ἐν ἐπιπέδῳ ὠραίζουμένη, ὡ τριττῆς τριάδος ἐπίγραμμα καὶ ὀλικῆς σφαγίδος<sup>6</sup> ἐξέστισμα, ὡ μαγνησίας σῶμα δι' ἧς τὸ πᾶν ἐπιφέρεται μυστηριον. ὡ χρυσορόφον<sup>7</sup> οὐρανίης νύμα, καὶ ἀργυρόλοφον ἐκ θαλάσσης ἀναπεμπόμενον πιεῦμα, ὡ ἀργυροθώρακον ἔχουσα χιτῶνα, καὶ χρυσοζῶμιον κομίζουσα βόστρυχον, ὡ σοφωτάτων εἰνοιῶν καλὴ γυμνασία, ὡ θειοτάτων ἀνδρῶν σοφὴ παιτουργία, ὡ ἀμνιῶν ἀνθρώπων ἀνεξυχρίαστον<sup>8</sup> πέλαγος, ὡ κεινοδόξων ἀνδρῶν προκαταλαμβανομένη ἀπειρία, ὡ ὑπερηφάνων μερόπων ἀναθυμουμένη ἔξαψις, ὡ εὐσεβῶν ἀνθρώπων ἀπερικάλυπτος ἀφή, ὡ ἐναρέτων ἀνδρῶν θεωρουμένη ὄψις, ὡ πρακτικῶν φιλοσόφων ἡδύπνσον ἀνθος, ὡ τελεία μονοειδῆς ἀποσκευή, ὡ σοφίας ἔργον, υιοσύνητον φέρουσα κάλλος, ὡ πᾶν ἐκ μιᾶς οὐσίας τὴν τοσαύτην αἰγὴν

<sup>1</sup> After ἱερᾶς M. has ταύτης; no stop after τέχνης.

<sup>2</sup> M.—ὑπερβαίνουσα.

<sup>3</sup> M.—πολλώνυμος . . . . πολλύειδος . . . .

<sup>4</sup> M.— . . . . ἐξ ὁμοίου ὁμοιογενὲς ἀναφαῖνον.

<sup>5</sup> M.—ποικιλοχρῶους.

<sup>6</sup> M.—σφραγίδος.

<sup>7</sup> M.—χρυσόροφον.

<sup>8</sup> M.—ἀμοιήτων . . . . ἀεχιρίαστον.

TRANSLATION.

STEPHANOS OF ALEXANDRIA THE UNIVERSAL PHILOSOPHER AND TEACHER  
OF THIS GREAT AND SACRED ART OF THE MAKING OF GOLD. LECTURE I  
WITH THE HELP OF GOD.

Having praised God the cause of all good things and the King of all, and his only begotten Son resplendent before the ages together with the Holy Spirit, and having earnestly intreated for ourselves the illumination of the knowledge of Him, we will begin to gather the fairest fruits of the work in hand, of this very treatise, and we trust to track down the truth. Now from a true theory of nature our problem must be set out. O nature<sup>23</sup> superior to nature conquering the natures, O nature become superior to itself, well regulated, transcending and surpassing the natures, O nature one and the same yielding and fulfilling the All, O union completed and separation united, O identical and nowise alien nature, supplying the All<sup>24</sup> from itself, O matter immaterial holding matter fast, O nature conquering and rejoicing in nature, O heavenly nature making the spiritual existence to shine forth, O bodiless body<sup>25</sup>, making bodies bodiless, O course of the moon illuminating the whole order of the universe, O most generic species and most specific genus<sup>26</sup>, O nature truly superior to nature conquering the natures, tell what sort of nature thou art—that which with affection receives itself from itself again, verily that which yields sulphur without fire<sup>27</sup> and has the fire-resisting power, the archetype of many names and name of many forms, the experienced nature and the unfolding, the many-coloured painted rainbow, that which discloses from itself the All, O nature itself and displaying its nature from no other nature, O like bringing to light from its like a thing of like nature, O sea becoming as the ocean<sup>28</sup> drawing up as vapour its many-coloured pearls, O conjunction of the tetrasomia adorned upon the surface, O inscription of the threefold triad and completion<sup>29</sup> of the universal seal, body of magnesia by which the whole mystery is brought about, O golden-roofed<sup>30</sup> stream of heaven, and silver-crested spirit sent forth from the sea, O thou that hast the silver-breasted garment and providest the liquid golden curls<sup>31</sup>, O fair exercise of the wisest intellects, O wise all-creative power of men most holy, O sea inscrutable by uninitiated men, O ignorance seized on beforehand by vainglorious men, O smoky kindling of disdainful mankind, O uncovered light of pious men, O countenance contemplated by virtuous men, O sweetly breathing flower of practical philosophers, O perfect preparation of a single species, O work of wisdom, having a beauty composed of intellect, O thou that flashest such

ἑξαστράπτουσα, ὡς σελήνη ἐκ τοῦ ἡλιακοῦ φωτὸς φῶς ἀπολαμβάνουσα, ὡς μία φύσις ἢ αὐτὴ, καὶ οὐκ ἄλλη φύσις, τέρπουσα καὶ τερπομένη, κρατοῦσα καὶ κρατουμένη, σωζομένη τε καὶ διασώζουσα, τί ὑμῖν καὶ τῇ πολλῇ ὕλῃ, ἐνὸς ὄντος τοῦ φυσικοῦ καὶ μιᾶς φύσεως νικώσης τὸ πᾶν, ποίας ταύτης εἰπέ· ποίας ; ὑμῖν τοῖς εὖ φρονούσιν ἀνατίθῃμι τὸ μέγα τοῦτο δῶρον, τοῖς τὴν ἀρετὴν ἠμφισμένους, τοῖς θεωρητικὴν πρᾶξιν κεκοσμημένοις, καὶ πρακτικὴν θεωρίαν ἐνιδρυμένοις· ποίας ταύτης, φράσσον, τοιοῦτον ἡμῖν προμηνύων ἔσεσθαι τὸ δῶρον. ποίας, λέγω καὶ οὐκ ἀποκρύψω. ὁμολογῶ τῆς ἄνωθεν φωτοδοσίας τὴν χάριν, ἢ παρὰ τοῦ πατρὸς τῶν φώτων ἡμῖν δεδώρηται. ἀκούσατε ὡς ἰσάγγελοι νόες. ἀπόθεσθε τὴν ὑλώδη θεωρίαν, ὅπως τοῖς νοεροῖς ὑμῶν ὀφθαλμοῖς ἰδεῖν ἀξιοθῆτε τὸ ἀποκεκρυμένον<sup>9</sup> μυστήριον· ἐνὸς γὰρ τοῦ φυσικοῦ χρεῖα καὶ μιᾶς φύσεως νικώσης τὸ πᾶν. ποίας ταύτης, ἤδη ὑμῖν σαφῶς λελέχθαι, ὅτι ἡ φύσις τὴν φύσιν τέρπει καὶ ἡ φύσις τὴν φύσιν κρατεῖ, καὶ ἡ φύσις τὴν φύσιν νικᾷ. τέρπεται μὲν ὑπὸ τῆς ἰδίας οὔσης φύσεως, κρατεῖται δὲ τὴν ἐξ αὐτῆς ἔχουσα συγγένειαν, νικᾷ δὲ ὑπὲρ φύσιν τὴν φύσιν ὅταν τὴν ἐνσωμον τῆς οἰκονομίας ἀποπληρώσῃ μυσταγωγίαν. ὅταν ἄφθαρτον ἀποθανάτωσῃ τὸ σῶμα, ὅταν τὴν πνευματωθεῖσαν μεταποιήσῃ συμπλήρωσιν, τότε ὑπὲρ φύσιν ἔσται θαυμαζόμενον ὡς πνεῦμα, τότε κρατεῖ τὸ κινούμενον σῶμα, τότε τέρπει ὡς ἴδιον οἰκητήριον, τότε νικᾷ ἀσωμάτως κατεμβατεύον ὄλον ἐξ ὄλου τοῦτο γινόμενον ὑπὲρ φύσιν θαυμαζόμενον. τί εἶπω πρὸς σὲ περιεκτικὴ μαγνησία· τίς μὴ θαυμάσει τὸν ἐκ σοῦ ἀποτελούμενον χρυσοκόραλλον ; ἐκ σοῦ γὰρ τὸ πᾶν τελεσιουργεῖται μυστήριον, σὺ τεθάρρησαι μόνῃ τῆς τοιαύτης τὴν γινώσιν, ἐν σοὶ ἐφήπλωται ἢ ἀνατολικὴ αὐτὴ περιλάμπουσα νεφέλη, ὁμοδίαιτον φέρεις ἐν σοὶ τὴν πολύμορφον τῆς Ἀφροδίτης εἰκόνα, οἰνοχόον δὲ πάλιν διακονοῦντα τὸν πυρίβολον ἀνθρακοβάτην (τοσαύτην οὖν ἐπιφέρουσα τὴν τηλαυγίαν νυμφικῶς ἑαυτὴν περικαλύπτεις, τὸ ἔναγνον τῆς φύσεως ἀναλαμβάνεις μυστήριον), δείξω λοιπὸν καὶ τοῦ σοῦ χαρακτήρος τὴν λαμπηδόνα. ἄρξομαι τὰς πολυμόρφους ἐκείνας μνηνεῖν εἰκόνας. τότε γὰρ σὲ τις νοερώς καθυφαίνων ἔνφλογον τὴν πυρώδη ἐξανάπτει. τὴν σὴν γὰρ θεωρῶν πολύχρωμον φαντασίαν, ἀρκεῖν οὐκ εὐτονοῦμαι περιθέων αὐτῆς τὰ κάλλη. ὁ σὸς γὰρ περιλάμπων μαργαρίτης ἀμαυροῖ μου πρὸς θεάν τὰς κόρας. ὁ σὸς ἐξανάπτων φεγγίτης πᾶσαν μου καταπλήττει τὴν ὄρασιν, ἢ σὴ ἀποστίλβουσα αἴγλη ὄλην εὐφραίνει μου καρδίαν, ὡς φύσις ἰληθῶς ὑπὲρ φύσιν νικῶσα τὰς φύσεις. σὺ τὸ πᾶν ἢ μία φύσις. ἢ αὐτὴ δι' ἧς καὶ τὸ πᾶν γίνεταί ἔργον. περιπτῶ γὰρ ἀριθμῶ ἢ σὴ τεχνολογεῖται πανκοσμία· τότε γὰρ γνωρίζῃ, ἐν οἷς

<sup>9</sup> M.—ἀποκεκρυμμένον.

a beam from a single being upon all, O moon drawing a light from the light of the sun, O single nature itself and no other nature, rejoicing and rejoiced over, mastering and mastered, saved and saviour, what have you in common with the multitude of material things, since one thing is natural and is a single nature conquering the All? Of what kind art thou, tell me, of what kind? To you who are of good understanding I dedicate this great gift, to you who are clothed with virtue, who are adorned with respect to theoretical practice and settled in practical theory. Of what kind, show us, thou who hast indicated beforehand that we should have such a gift. Of what nature, I shall tell and will not hide. I confess the grace of the giving of light from above, which is given to us by the lights of the father. Hear ye as intelligences like to the angels. Put away the material theory so that ye may be deemed worthy to see with your intellectual eyes the hidden mystery. For there is need of a single natural <thing><sup>32</sup> and of one nature conquering the all. Of such a kind, now clearly to be told you, that the nature rejoices in the nature and the nature masters the nature and the nature conquers the nature. For it rejoices on account of the nature being its own, and it masters it because it has kinship with it, and, superior to nature, it conquers the nature when the corporeal operation of the process shall fulfil the initiation into the mysteries. For when the incorruptible body shall be released from death<sup>33</sup>, and when it shall transform the fulfilment which has become spiritual, then superior to nature it is as a marvellous spirit; then it masters the body moved (by it), then it rejoices as over its own habitation, then it conquers that which in disembodied fashion haunts the whole which is engendered of the whole, that is admirable above nature. Which I say to you is the comprehensive magnetism<sup>34</sup>. Who will not wonder at the coral of gold<sup>35</sup> perfected from thee? From thee the whole mystery is fully brought to perfection, thou alone shalt have no fear of the knowledge of the same, on thee will be spread the radiant eastern cloud; thou shalt carry in thyself as a guest the multiform images of Aphrodite, the cupbearer again serving the fire-throwing bearer of coals (then carrying such a brightness from afar, in bridal fashion you veil the same, you receive the undefiled mystery of nature). I will show moreover also the lustre of thy nature, I will begin to indicate thy multiform images. For then he, who intelligently interweaves thee that hast fire within thee, rekindles the fiery thing. For looking on thy many-coloured visions I shall be powerless as I circle round its beauties. For thy radiant pearl blinds the sight of my eye. Thy phengites<sup>36</sup> rekindling astounds all my vision, thy shining radiance gladdens all my heart, O nature truly superior to nature, conquering the natures. Thou, the whole, art the one nature. The same by which the whole becomes the work. For by an odd number<sup>37</sup> thy all-cosmos is systematized. For then thou shalt understand in what respects thou shalt look ahead, then thou shalt discover in what things shall be thy ambit, then thou shalt stop the struggles of the place<sup>38</sup>, then thou shalt disclose the kingly purple, which also

προσδοκᾶσαι, τότε ἀνακαλύπτῃ, ἐν οἷς περὶδρομεῖσαι, τότε ἀποπαύεις τῆς στάσεως τοὺς ἀγῶνας, τότε μηνύεις βασιλικὴν ἀλουργίδα, ἣν καὶ διὰ τῆς σῆς παιδίσκης ἐπικοπίζη<sup>10</sup>. τότε οὐκ ἔναγχος κύματος, ἀλλὰ χρυσόρροφος<sup>11</sup> θάλαμος, τότε οὐ πολύτροπος ἐπιτηδειότης, ἀλλὰ πάνσοφος ἀγχίνοια, τότε οὐ στέρησις τῶν ἐναρέτων ἀνδρῶν εὐρίσκεται, ἀλλὰ ἀπόλαυσις τῶν τελείων ἀνδρῶν ἀναδείκνυται. τοιοῦτος γὰρ αὐτῆς ὁ ἐν περιττῷ ἀριθμῷ εὐρισκόμενος ὄρος. οὕτως αὐτὴν ἐπιγνώσκονται οἱ τῆς ἀρετῆς ἀνάπλεοι, ἀκούσατε οἱ τῆς σοφίας ἐρασταὶ καὶ εἴσεσθε τὰ μεταλία<sup>12</sup> τοῦ παντοκράτορος θεοῦ. αὐτὸς γάρ ἐστιν ὁ πύσης σοφίας χορηγός, φῶς οἰκῶν ἀπρόσιτον, φῶς, ὃ φωτίζει πάντα ἄνθρωπον ἐρχόμενον εἰς τὸν κόσμον. οὐδὲν γάρ ἐσμεν, ἄτερ τῆς αὐτοῦ θεαρχίας, οὐδὲν ὄλως ἐστὶ τὸ ζητούμενον τοῦτο δῶρον πρὸς τὴν αὐτοῦ μακαριότητα. προσεγγίσατε ὦ φίλοι ἀρετῆς πρὸς τὴν αὐλοῦ ἐκείνην ἔφεσιν. μάθετε ὡς γλυκὺ θεοῦ φῶς, οὐκ ἄξια τὰ νῦν θαυμαζόμενα πρὸς τὴν μακαρίαν ἐκείνην λῆξιν, μόνον οἰκειωθῶμεν αὐτῷ δι' ἀγάπης, καὶ ληψόμεθα παρ' αὐτοῦ τὴν ἐξ ἀβύσσου ἄβυσσον πηγάζουσαν σοφίαν, ἵνα δυνηθῶμεν διὰ τῆς χάριτος τοῦ κυρίου ἡμῶν Ἰησοῦ Χριστοῦ ποταμούς ἀναβλῦσαι ὕδατος ζῶντος, ὅπως θαυμάσας τοῦ δημιουργοῦ τὴν τοσαύτην σοφίαν ὑμνήσης αὐτοῦ τὴν εἰς ἡμᾶς μεγάλην φιλανθρωπίαν, τί θαυμάζειν δεῖ χρυσοκόραλλον εἶδος. θαυμάζειν δὲ δεῖ πλεον τὸ ἀπερίγραπτον κάλλος· ὅμως καὶ τὸν πόθον ὑμῶν πληρώσω, ἵνα τοσοῦτον ἐρᾶν ἀξιωθῆτε μεθ' ὑμνωδίας θεολογεῖν τὴν ὑπεράγαθον τοῦ θεοῦ ἀγαθότητα.

<sup>10</sup> M.—ἐπικομίζη.

<sup>11</sup> M.—χρυσόροφος.

<sup>12</sup> M.—μεγαλία.

thou shalt bring with thee by the help of thy maiden. Then will not be the recent labour but a couch canopied with gold, then not a multiform ability but an all-wise sagacity, then no deprivation of virtuous men is found, but a fruition of perfect men is displayed. For such is the measure of it found in the odd number.

Thus those full of virtue will discover thee ; hear ye who are lovers of wisdom and know the mighty deeds <sup>39</sup> of the all-ruling God. For he it is that furnishes all wisdom, unapproachable light of houses, light which illumines each man as he comes into the world. For we are nothing apart from his Supreme Divinity ; altogether nothing is the gift which is sought, in respect of his blessedness. Approach, O lovers of virtue, to that immaterial desire. Learn how sweet is the light of God. Unworthy are the things which are now wondered at, in respect of that happy lot. Alone we are made friends with him by love, and we receive from him the wisdom springing forth as an abyss from the abyss, that we may be enabled by the grace of our Lord Jesus Christ to gush forth rivers of living water ; so that wondering at such wisdom of the demiurge we may praise his great kindness towards us. Why should we marvel at the species Chrysocorallos ? We should wonder rather at the infinite Beauty. So also I will fulfil your desire, that you may be made worthy to love such a One <and> with hymnody to discourse of the more than good goodness of God.

Τοῦ αὐτοῦ Στεφάνου συν θεῶ Πρᾶξις δευτέρα.

Τὸ τῶν ἀριθμῶν συγκείμενον πλήθος ἐκ μιᾶς τῆς ἀτόμου καὶ φυσικῆς μονάδος τὴν ὑπαρξίν ἔχει, ἄπειρον αὐτὴ οὐντείνουσα τὴν τῶν ἀλλήλων σχέσιν, ὡς ἐξ αὐτῆς προσεληλυθότα περιέχει καὶ περικρατεῖ. μονὰς γὰρ εἴρηται διὰ τὸ μένειν αὐτὴν ἄτρεπτον καὶ ἀμετακίνητον. τὴν γὰρ κυκλικὴν καὶ σφαιροειδῆ τῶν ἀριθμῶν θεωρίαν, ὅμοιαν ἐαυτῆς ἀναδείκνυσιν ἀποκατάληξιν τῶν πέντε ἀριθμῶν φημί καὶ τῶν ἕξ· ἐκ γὰρ αὐτῶν εἰς ἑαυτὰ πάλιν ἀνακυκλοῦνται. καὶ πᾶσα μὲν τετραγωνικὴ πλευρὰ ἐξ ἰδιομήκους γινομένη συγγένειαν ἔχει πρὸς τὸ ὅμοιον, ἵνα τελείαν ἀποκαταστήσῃ συμπλήρωσιν. παντὸς δὲ χύματος καὶ μορίων<sup>13</sup> ἐξηκουστόν, ἐξ αὐτῆς τὴν γένεσιν ἔχοντα καὶ ἀνακυκλοῦντα πάλιν εἰς ἑαυτὴν συσσελλόμενα τὴν φυσικὴν ἀποπληροῦσι μονάδα. πάσης δὲ κυκλικῆς σφαίρας τὸ σημεῖον κέντρον ἐστίν, ὁμοίως δὲ καὶ παντὸς τριγώνου καὶ ἐπιπέδου καὶ στερεοῦ σχήματος διὰ γραμμῶν τιθέντος, τὸ αὐτὸ συννοεῖσθω. καὶ τῆς μουσικῆς δὲ ἱστορίας οἷ τε νέατοι καὶ παρύπατοι, εἰ δὲ ἐκ τεσσάρων, εἰδὲ ἐπὶ τρίτῳ λόγῳ, τότε πρὸ αὐτοῦ πρόλογον εἶναι καὶ τὸν ὑπ' αὐτοῦ ὑπόλογον, δι' ἧς τὰς τοιαύτας τῶν ἀναλογιῶν συνδέσεις, καὶ διὰ πασῶν<sup>14</sup> αὐτῶν συμφωνίας ἐκ τῆς τοσαύτης αὐτῶν ἀνασώζομεν μουσικῆς ἱστορίας. Ὅρφεά γάρ φησι ληχάνοντες ῥυθμικοῖς<sup>15</sup> ἐνηρμόσθαι φθόγγοις, ὥστε καὶ τῆς ὁμοταγοῦς οὐσιῶν<sup>16</sup> κινήσεως ἢ συμφωνία ὑπηχεῖται<sup>17</sup>, καὶ τὴν ἄδουσαν ἐμμελῶς ἐκτελεῖ μελωδίαν. ἐξ ἑνὸς γὰρ τῆς τοῦ ὄργανου ἢ τούτων συνίσταται κατασκευή, ὅθεν καὶ τὴν ἔναρθρον τοῦ σώματος κατασκευὴν οὕτως διακεῖσθαι ὀστέοις τε καὶ ἄρθροις καὶ μορίοις καὶ νεύροις, καὶ διὰ τοῦ πλήκτρου ἀναδιδομένου ἀέρος δίκην ὄργανου κινουῦντος τὴν φωνὴν ἀποπέμπεσθαι εἰς ἓν τι τῆς οὐσίας συναρμοσθέντα καὶ ἐαυτῆς βία κρατούμενα καὶ συνιστάμενα· τὸν αὐτὸν δὲ τρόπον καὶ τὴν τοῦ ἀέρος σύγκρασιν. δύο γὰρ ἄκρων ποιότητων, εἰς μεσίτης καὶ διαλλάκτης εὐρίσκεται, σώζων αὐτῶν τὰ ἑκάτερα, διὰ τὴν πρὸς αὐτὰς γειννίασιν καὶ πολλὴν συγγένειαν. ἀλλὰ καὶ τῆς σφαιροειδοῦς καὶ ἀπλανοῦς ταύτης τῆς τοῦ πόλου κινήσεως, ἐκ τῆς τοῦ ὑπὲρ γῆν ἡμισφαιρίου παρὰ τοῦ ὀρίζοντος τὸν ἐγκόσμιον τοῦτον καὶ διαφανῆ πόλον, καὶ τοῦ ἡλιακοῦ φωτὸς ἐκ τῆς<sup>18</sup> πᾶσι τούτοις ἐπιχορηγοῦντος τὰ φῶτα καταυγίζει. ἐξ αὐτῆς γὰρ οὐ μόνον οἱ ἀστέρες τὴν τοῦ φωτὸς μετέχουσι τάξιν, ἀλλὰ καὶ ἡ τῆς σελήνης ἐπιφάνεια τὴν ἐκ τοῦ φωτὸς ἐπιλαμβάνουσα αὐγὴν, φαίνει τε πᾶσαν τὴν νυκτερινὴν λαχοῦσαν δαδουχίαν. καὶ ἕξεις πάντα ἀπλῶς εἰπεῖν τὰ τοιαῦτα ἐκ τοῦ ἑνὸς αὐτῶν καὶ πρωτίστου τὴν οὐσίαν εἰληχότα, σώζουσι τὰ τῆς φύσεως καὶ ἀποπληροῦσι θεωρίας. καιρὸς ἂν εἴη λοιπόν, τὴν ἐν τῷ προάγοντι

<sup>13</sup> M.—Stop after μορίων.

<sup>14</sup> M.—διαπάσωι.

<sup>15</sup> M.—Ὅρφατον . . . ῥυθμικοῖς.

<sup>16</sup> M.—ἐι ηρμῶσθαι. For οὐσιῶν M. reads αὐτῶν.

<sup>17</sup> M.—ὑφηχεῖται.

<sup>18</sup> For ἐκ τῆς M. reads ἀκτίς, and for πᾶσι, πᾶσιν,

## SECOND LECTURE OF THE SAME STEPHANOS WITH THE HELP OF GOD.

The multitude of numbers compounded together has its existence from one atom and natural monad ; this, which itself exerts a mutual condition, comprehends and rules over the infinite as emanating from itself. For the *monad* <sup>40</sup> is so called from its *remaining* immutable and unmoved. For it displays a circular and spherical contemplation of numbers like to itself, I speak of a completion of the five numbers and of the six. For from these they come round again to themselves. And every side of a rectangle generated from the same length has kinship to its like that it may restore a perfect fulfilment. For the sixtieth part of every great quantity and of fractions, taking origin from it <the monad> and returning again to it, being contracted together, complete the natural monad. The symbol of every circular sphere is the centre, likewise of every triangle and plane and solid figure set out by lines ; let this same be thought of.

Also of the musical learning, both the lowest strings and that next the first, whether of four strings or upon the third ratio, that which is before it must be the antecedent and that after it the consequent, by which we preserve the binding together of the proportions and of the whole scale of harmony <sup>41</sup> as a result of such musical learning.

For they who pluck the strings <sup>42</sup> say that Orpheus made melody with rhythmical sounds so that the symphony should re-echo the co-ordinated movement of the elements and the sounding melody should be harmoniously perfected. For from the one instrument the whole composition takes its origin, whence also the organization of the articulate body is ordered in the bones and joints and parts and nerves, and by the plectrum of the air, given forth in the fashion of a moving instrument, a voice is sent forth to the One which is joined to its essence and which conquers and organizes it by its own life : the very mode and blending of the air. For of two extreme qualities there is found one mediator and conciliator which preserves the qualities of both on account of its resemblance and close kinship to them. And also the movement of the pole being spherical and stable, the light of the hemisphere which is above the earth, arising from the line dividing the mundane and the diaphanous pole, also radiates forth the fires of the sunlight <derived> from that which supplies it to all things. For from it not only do the stars partake of the order of the light, but also the appearance of the moon, giving out rays derived from the light, displays its nightly allotted torchbearing. And you shall have all such things to speak of singly, as derived from one of them, and as the essence of the very first returned again ; they preserve the things of the nature and fulfil the contemplation. But were there time enough to consider our discourse in the progress of a proem, (I would speak of) that

τοῦ προοιμίον σκέψασθαι διήλεξιν, καὶ τὸ τῆς σεληνιακῆς ἀπορροίας πίπτου, πῶς δὲ εὐρίσκεται, καὶ πῶς οἰκονομεῖται, καὶ πῶς ἄκανστον ἔχει φύσιν. ὡ δὲ διδασκαλίας σοφία τῆς τοιαύτης κατασκευῆς διασημαίνουσα τὸ ἔργον, ὡ λευχημονούσα σελήνη<sup>19</sup> ἀποστίλβουσα λευκότητα, μάθωμεν τίς αὕτη ἢ σεληνιακή, ἵνα τὸ ἀπορούμενον μὴ διαλάβωμεν. ἔστι δὲ αὕτη ἢ λευκοφόρος χιῶν, τὸ πολύφωτον ὄμμα τῆς λευκασίας, ἢ νυμφαγωγὸς στολὴ τῆς οἰκονομίας, ὁ ἄφθαρτος χιτών, τῆς εὐμορφίας τὸ νοοσύνητον κάλλος, τῆς τελειώσεως τὸ λευκότατον σύνθεμα, τῆς ἀποπληρώσεως τὸ πηκτὸν γάλα, τῆς θαλάσσης τὸ ἀφροσέληνον ἑώφας, ἢ μαγνησία τῆς Λυδίας, τὸ ἰταλικὸν στήμι, τῆς Ἀχαιῶν ὁ πυρίτης, ὁ ἀπὸ Ἀλβανίας, τὸ πολυώνυμον τῆς ἀγαθοεργίας, ἢ τὸ πᾶν ἐπικουμίζουσα, ἢ τὸ ἐν πᾶν<sup>20</sup> φέρουσα, ἢ τὸ θαυμαστὸν ἔργον ἀποπληρούσα· τί δὲ ἔστιν ἢ ταύτης ἀπόρροια; οὐκ ἀποκρύψω, ἀλλ' ἐμφανὲς δείξω τὸ ζητούμενον κάλλος. ἔστιν οὖν αὐτῆς ἢ ἀπόρροια τὸ ἐν αὐτῇ κεκρυμμένον μυστήριον, ὁ πολυτίμος μαργαρίτης, ὁ φλογοφόρος φεγγίτης, ὁ χρυσοράντιστος χιτών, τὸ χρυσοζώμιον βρώμα, ὁ χρυσοκόσμος σπινθήρ, ὁ νικηφόρος ἀνθαγαθεὺς<sup>21</sup>, τὸ βασιλικὸν περιβόλαιον, ἢ ἀληθινὴ πορφύρα, τὸ πολυτίμητον στέμμα, τὸ ἄπυρρον θεῖον, ὁ εἰσκριτῆρ τῶν σωμάτων, τὸ ξανθὸν ὄλον εἶδος, ὁ ἐγκεκρυμμένος θησαυρός, ὁ θάλαμον ἔχων τὴν σελήνην, ὁ ἐν αὐτῇ τῇ σελήνῃ γνωστικῶς θεωρούμενος, ἢ ὁ Ἐ Ψ Ψ η αγρ ρ Ψ ω<sup>22</sup>. ὁ λευκὸς μὲν θεωρούμενος, ξανθὸς δὲ γνωριζόμενος, ὁ τῇ λαχούσῃ σελήνῃ νυμφίος, ἢ ἐξ αὐτῆς χρυσὴ σταγῶν, ἢ ἀπ' αὐτῆς ἐνδοξος ἀπόρροια, ἢ ἀναλλοίωτος συμπλοκή, ἢ ἀνεξιλείπτος περιδρομή, ἢ θεοδώρητος ἐργασία, ἢ θαυμαστὴ χρυσοποιία, καὶ ἵνα μὴ ταύτην παραδράμω, ἐπὶ τὸ προκειμένον αὐθις ἐπάνειμι τοῦ λόγου. μετὰ τὴν τοῦ χαλκοῦ ἐξίωσιν καὶ ἐξίσχνωσιν καὶ μέλανσιν ἐφ' ὕστερον λεύκωσιν, τότε ἔσται βεβαία ξάνθωσις. ὡ σοφίας ἔργον ὑπὲρ φύσιν θαυμαζόμενον, ὡ ἀφθονος χάρις δαψιλῶς ἐκπηγάζουσα, οὐ φθονεῖ ὁ σοφώτατος, ἀλλ' ὑποδείκνυσι σαφῶς τὴν ἐξηγήσιν. [μετὰ τὴν τοῦ χαλκοῦ ἐξίωσιν καὶ ἐξίσχνωσιν καὶ μέλανσιν, εἰς ὕστερον λεύκωσιν, τότε ἔσται βεβαία ξάνθωσις.] τί λέγεις φιλόσοφε μετὰ τὴν τοῦ χαλκοῦ ἐξίωσιν; ποίαν ταύτην; εἰπέ, φρέσσον ἡμῖν τῆς ἐργασίας τὰ ἀπόκρυφα. μετὰ τὴν τοῦ χαλκοῦ ἐξίωσιν, καὶ πῶς ἔστιν ἐξίωσαι χαλκὸν τὸν ἰὸν ὄλον φέροντα; πῶς; ἐγὼ ὑμῖν λέξω τοῦ λόγου τὴν ἀκρίβειαν, τὴν διὰ νεφέλης βαδίζουσαν Ἀφροδίτην. μετὰ γὰρ τὴν τοῦ χαλκοῦ ἐξίωσιν, τουτέστιν καλῶς οἰκονομηθεῖσαν λεύκωσιν καλῶς προβιβασθεῖσαν περίσκεψιν, μετὰ γὰρ τὴν τοῦ χαλκοῦ<sup>23</sup> αὐτοῦ καὶ ἐξίσχνωσιν τουτέστιν λεπτοτέραν τῆς λειώσεως διέθεσιν, καὶ ἔτι τὴν ἐπακολουθοῦσαν τούτοις ἐπιφερομένην μελανίαν εἰς ὕστερον εἴρηται λεύκωσιν, τότε ἔσται βεβαία ξάνθωσις. ὅταν γὰρ τὴν τῆς ρυτίδος ἀποπτύση μελανίαν, εἰς λευκότητα λίαν μεταφέρεται. καὶ ὅταν εἰς λευκότητα λίαν μεταφέρηται, τότε τοῦ στιλπνοῦ φωτὸς ἢ σελήνη ἀπανγάζει τὰς ἀκτῖνας, τότε πότε, εἰς ὕστερον λεύκωσιν, ὅτε λευκὸν ἴδῃς τὸ σύνθεμα· ὅτε γὰρ πλησίον σελήνης φανῇ, τότε τὸ πανσέληνον αὐτῆς μηνύει τὸ φῶς. τότε βεβαία ἢ ξάνθωσις. ποία αὕτη; εἰπέ. ἢ θεωρουμένη λευκή. καὶ πῶς τὸ λευκὸν ξανθὸν ἀποτελεῖς;

<sup>19</sup> After σελήνη M inserts πάνυ.

<sup>20</sup> M.—ἢ τὸ ἐν τὸ πᾶν . . . .

<sup>21</sup> For ἀνθαγαθεὺς M. reads ἀνδραγαθεὺς.

<sup>22</sup> See note <sup>50</sup>.

<sup>23</sup> M. has τοῦ χαλκοῦ αὐτοῦ τοῦ χαλκοῦ.

which falls from the moon's waning <sup>43</sup>, how it is found, how it is treated, and how it has an unburnt nature. O wisdom of teaching of such a preparation, displaying the work, O moon clad in white and vehemently shining abroad whiteness, let us learn what is the lunar radiance that we may not miss what is doubtful. For the same is the whitening snow, the brilliant eye of whiteness, the bridal procession-robe of the management of the process, the stainless chiton, the mind-constructed beauty of fair form, the whitest composition of the perfection, the coagulated milk of fulfilment, the Moon-froth <sup>44</sup> of the sea of dawn <sup>45</sup>; the magnesia of Lydia, the Italian stibnite, the pyrites <sup>46</sup> of Achæa, that of Albania, the many-named matter of the good work, that which lulls the All to sleep, that which bears the One which is the All, that which fulfils the wondrous work. What is this emanation of the same (moon)? I will not conceal it, but will display visibly the sought-for beauty. For the emanation of it is the mystery hidden in it, the most worthy pearl, the flame-bearing moonstone, the most gold-besprinkled chiton, the food of the liquor of gold <sup>47</sup>, the chrysocosmic <sup>48</sup> spark, the victorious warrior, the royal covering, the veritable purple, the most worthy garland, the sulphur without fire, the ruler <sup>49</sup> of the bodies, the entire yellow species, the hidden treasure, that which has the moon as couch, that which in the moon is gnostically seen as  $\times \circ \bar{\eta} \omega \psi \eta \delta \zeta \rho \gamma \omega$  <sup>50</sup>. For it is white as seen, but yellow as apprehended, the bridegroom to the allotted moon, the golden drop (falling) from it, the glorious emanation from it, the unchangeable embrace, the indelible orbit, the god-given work, the marvellous making of gold, and that I may not pass over the same, I will return again to the present matter of the discourse. 'After the cleaning of the copper and its attenuation and blackening before the latter whitening, then is the stable yellowing' <sup>51</sup>. O work of wisdom above nature wondered at, O unstinted grace amply gushing forth, the Wisest <sup>52</sup> is not envious, but clearly displays his explanation. After the cleaning of the copper and its attenuation and blackening, to the later whitening, then is the solid yellowing. Why say you, philosopher, 'after the cleaning of the copper'? What same (do you mean)? Speak, tell to us the secrets of the work. 'After the cleaning of the copper', and how is one to clean the copper yet bearing all its *ios*? <sup>53</sup> How? I will tell you the accurate meaning of the phrase—Aphrodite walking through a cloud. 'After the cleaning of the copper', that is a trituration well managed, a consideration well taught beforehand; 'After the attenuation of the copper', that is a finer condition of trituration, he also speaks of the blackness placed upon it and following upon these for the purpose of the later whitening; then is the solid yellowing. For when it shall spurn the blackness of the wrinkled crust <sup>54</sup>, it is transformed to whiteness; then the moon of shining light shall send forth the rays; then  $\langle$ one comes $\rangle$  to the later whitening, when you shall see the white compound. For when the full of the moon appears, then the full moon discloses its light. Then solid is the yellowing. What is this? Say. The whiteness perceived. And how do you render the white yellow? Ye wisest of men, over-pass the

ὡ σοφώτατοι, ὑπερβαίνει λογισμόν, τοῦτο κρύφιον ἐστὶν τὸ ἐρώτημα, μυστικὴ λέξις καὶ ἡ ἐπίσκεψις. ἐγὼ φράσω τὸ μυστήριον τὸ ἀπόκρυφον καθὼς ἀνωτέρω ὑμῖν προλέλεκται· μετὰ τὴν τοῦ χαλκοῦ ἐξίωσιν καὶ ἐξίσχυσιν καὶ μέλανσιν εἰς ὕστερον λεύκωσιν, τότε ἔσται βεβαία ξάνθωσις. ὅτε ἴδῃς τὴν γινομένην λεύκωσιν ἔνδον αὐτῆς, ἐπιγίνωσκε τὴν περικεκαλυμμένην ξάνθωσιν, τότε ξανθὴν νόει τὴν λεύκωσιν οὖσαν, τότε καὶ λευκὴ οὖσα, ξανθοῖ διὰ τὴν ἐν αὐτῇ ἀποκεκρυμμένην ξάνθωσιν, διὰ τὸ ἐμβατεύειν αὐτῆς τὰ τῆς καρδίας βάθη διὰ τὸ ἐνσωμον ἔχειν τὴν τῆς D<sup>24</sup> λεύκωσιν, καὶ ἀρρήτως ἐν αὐτῇ τὴν ξάνθωσιν διήκουσαν. τότε βεβαία ἔσται ξάνθωσις· ποῖα; ἡ γινομένη λευκὴ· αὕτη ἐστὶν ἡ ξανθὴ. αὕτη μὲν τῷ χρώματι λευκὴ φαίνεται, ἡ δὲ φύσις ξανθὴ ὑπάρχει, οὐδὲν ὑπολέλειπται, οὐδὲν ὑστερεῖ, πλὴν τῆς νεφέλης καὶ τοῦ ὕδατος ἢ ἄρσις. βλέπεις τὸν ἀρχαιότατον. οὐχ ὄρας τι ἀπεφῆματο ὁ σοφός; οὕτως αἰνίττεται ὡς τελειῶς. οὕτως ἀπεφῆματο ὡς καθηγητῆς τὸ πᾶν ἀποδείκνυσι λέγων, οὐδὲν ὑπολέλειπται, οὐδὲν ὑστερεῖ, πλὴν τῆς νεφέλης καὶ τοῦ ὕδατος ἢ ἄρσις· δείξας ἐν τούτῳ τὴν τοῦ ὄλου κατασκευὴν, ἀποδοὺς δι' ὀλίγου τὸ πᾶν, ἵνα μὴ πολλῇ ὕλῃ καταχώσητε τὰ κινούμενα, ἵνα μὴ Κιλικίας τὸν κρόκον, καὶ ἀναγαλλίδος βοτάνη καὶ τὸ Πόντιον αὐτοῖς ῥᾶ, καὶ τῶν ἄλλων ὀπῶν, χολῆς τετραπόδων καὶ κνωδάλων τινῶν, λίθον τε καὶ μετάλλων φθαρτικῶν νοήσωσι, τὰ τῆς τελεσιουργικῆς καὶ ἐνικῆς καὶ μιᾶς φύσεως τὰ ἀνόμοια, ἵνα μὴ πλαυηθέντες ἄνθρωποι ἀποστῶσι τῆς ἀληθείας, ἵνα μὴ ἐπὶ τῆς φυσικῆς ὑπάρξεως ἀνύπαρκτον διάθεσιν μετέλθωσιν. τί λοιπόν; ὁ ἐξοχώτατος καὶ πάσης ἀρετῆς σύμβουλος, περιιάγων αὐτοὺς καὶ ἔλκων πρὸς τὸν τῆς ἀληθείας σκοπόν, ἵνα μὴ ὡς ἔφην εἰς ὑλικὰς καμίους καὶ διοργανισμοὺς ὑελῶν, ἀμβύκων, λωπάδων τινῶν καὶ κηροτακίδων καὶ αἰθάλων. καὶ οἱ εἰς τὰ τοιαῦτα ἐπασχολούμενοι εἰς κενὸν αὐτοῖς ὁ τοῦ καμάτου πόνος ἐξαγορευθῆ· ἀλλ' ὄρα πῶς ἐν τῇ φράσει τὸ πᾶν ἀπεπλήρωσεν. οὐδὲν ἀπολέλειπται, οὐδὲν ὑστερεῖ πλὴν τῆς νεφέλης καὶ τοῦ ὕδατος ἢ ἄρσις. ποῖα νεφέλη; εἰπέ. τίς ἡ νεφέλη καὶ τι τὸ ἐξ αὐτῆς ἐκτελούμενον ἔργον; δείξον ἡμῖν φανερώτατα, ὅπως ἐπιγνωσώμεθα τοῦ λόγου τὴν δύναμιν. καὶ πρὸς ταῦτα ὁ φιλόσοφος· νεφέλη ἐστίν, τοῦ ὄλου συνθέματος ἔργον, ἡ διὰ τοῦ θεοῦ ὕδατος καλῶς ἀποστίλβουσα, ἡ ἐμφυῶς τὴν λείωσιν ποιησαμένη, ἡ οἰκονομικῶς φαινομένη, καὶ νοητῶς καταλαμβανομένη. νεφέλη ἐστὶν ἡ τῆς ἐργασίας ἐξάπλωσις, ἡ ἐπίπεδος ἐπιφάνεια, ἡ ἀργυρώνητος στήμων, ἡ ἀερούφαντος περιπλόη, ἡ Κελτικὴ ἄρδος, τὸ Ἀτλαντικὸν πέλαγος, ἡ Βρεττανικὴ μέταλλος, ὁ στεφανόκοσμος ὠκεανὸς, ἡ ἀμέτρητος ἄβυσσος, ἡ σφαιρόμορφος κτίσις, τὸ οὐράνιον σῶμα, ἡ τὸ πᾶν περιέχουσα καὶ περιλαμβάνουσα, αὐτὸ τὸ εἶδος τὸ ἀτίμητον, ἡ ποθουμένη θεωρία, τὸ ζητούμενον θέαμα, τὸ ἐν ὄλον καὶ ὄμον ἔν, ἡ ἱερὰ λευκῶσις τοῦ παντὸς τιμίου ἔργου, ἡ ὅλη κατασκευὴ, τὸ ἐνεπίστημον ἔργον<sup>25</sup>, τὸ συμπέρασμα τῆς συμπληρώσεως, τὸ λειωθὲν καὶ καλῶς οἰκονομηθέν, το

<sup>24</sup> M. has ( in place of ) .

reasoning, this answer is a secret, a mystic speech and consideration. I will tell you the hidden mystery, whence it is proclaimed above you. 'After the cleaning of the copper and its later attenuation and the blackening for the later whitening, then is the solid yellowing.' When you see the whitening taking place within it, recognize the concealed yellowing, then know the whitening as being yellow; then also being white, it becomes yellow by the hidden yellowness, by possessing the depths of its heart, by having the corporeal possession of the whiteness of the silver and, unutterably, the pervading whiteness in it. 'Then is the solid yellowing.' What is this? That which has become white, it is the yellow. For the same white appears in the colour, but the yellow nature overrules it. 'Nothing is left remaining, nothing is left behind except the vapour and the raising of the water' <sup>55</sup>. Consider the most ancient one <sup>56</sup>. Do you not see what the wise man has declared? Thus he speaks in riddles as completely as possible. Thus he declares, as a teacher demonstrates everything, saying 'nothing is left remaining, nothing is lacking, except the vapour and the raising of the water'. Having shown in this the preparation of the whole, rendering all in few words, that ye may not overwhelm the moving things with much matter, that ye may not think about saffron of Cilicia <sup>57</sup> and the plant of anagallis <sup>58</sup>, and the Pontic rhubarb <sup>59</sup> for themselves, and of other juices, gall <sup>60</sup> of quadrupeds and certain beasts, of stones and of destructive minerals, things that are dissimilar to the perfection-making, single and one nature, that men wandering shall not be led away from the truth, in order that in a natural existence they shall not seek for a non-existent tendency. What else? The most eminent man and counsellor of all virtue turns them around and draws them to the view of truth, that you may not, as I said (take note of) material furnaces and apparatus of glasses, alembics, various flasks, kerotakides and sublimates. And those who are occupied with such things in vain, the burden of weariness is declared by them <sup>61</sup>. But see how the All is fulfilled in the phrase. 'Nothing is left remaining, nothing is lacking save the vapour and the raising of the water.' What kind of vapour? Say. What is the vapour and what is the work brought to perfection by it? Show us most clearly the way in which we may recognize the power of the word. And on this matter the philosopher says: 'the vapour is the work of the composition of the whole' <sup>62</sup>, that which shines brightly through the divine water <sup>63</sup>, that which makes the trituration naturally, that which appears in the course of the method, and is apprehended intellectually <sup>64</sup>. The vapour is the unfolding of the work, the level manifestation, the thread bought with silver, the air-displaying voyage, the Celtic nard <sup>65</sup>, the Atlantic sea, the Britannic metal <sup>66</sup>, the ocean garlanding the world, the unmeasured abyss, the sphere-shaped universe, the heavenly body, that which encompasses and embraces the all, the despised species, the longed-for contemplation, the sought-for spectacle, the one whole and whole one, the holy whitening of the whole worthy work, the whole preparation, the one work of wisdom, the conclusion of the fulfilment, that which is trituated and well managed, the

τελείως πληρωθέν. οὐδὲν γὰρ ὑπολέλειπται, πλὴν τῆς νεφέλης καὶ τοῦ ὕδατος ἢ ἄρσις. τὸν τῆς νεφέλης σαφῶς ἐφοδηγηθέντες<sup>26</sup> τρόπον, ἐπὶ τὴν τοῦ ὕδατος ἄρσιν μετελεύσω μου τὸν λόγον. τί ἄρα ἐστὶ τοῦτο τὸ ἐπαγόμενον; τίς ἢ τοῦ ὕδατος αὕτη ἄρσις; εἰπέ ὦ καθηγητά· πλήρωσον σου τῆς χάριτος τὰς δωρεάς· καταύρασον ἡμῶν τὰς ἀμβλυώπους κόρας, σαφήνισον τὴν τοῦ λόγου ἔναρθρον σύστασιν, τίς ἢ τοῦ ὕδατος αὕτη ἄρσις; καὶ περὶ τούτου οὐκ ἀπεισιώπησεν· εἶπεν, τὸ ἕμιγές κάλλος ὕλην οὐχ ὑποδέχεται, ἢ αἶλος οὐσία, ἀπλῆ μὲν ἐστὶ καὶ σύνθετος, τὸ μυριώνυμον τοῦτο ἀγαθόν. μίᾳ γὰρ ὑπαρχον οὐσίας, εἰς ἑαυτὴν συστέλλεται, περὶ αὐτὴν ἰναπαύεται<sup>27</sup> τὴν μίαν αὐγὴν τὰς ὑγροποιούς ὅλως οὐκ ἐντίθεται ἰκμάδας<sup>28</sup>. ἀποβολὴν δὲ ἔληθεν τῶν ρευμάτων τὴν βίαν· ἀποθεῖται τῶν ὑδάτων τὰς ῥύσεις· πῶς γὰρ ἐστὶν αὐτῆς ἰδεῖν τὴν κίνησιν, μὴ οὕτως ταῦτα ἀποσειοαμένης; οὐ δύναται τις αὐτῆς ἐμπλησθῆναι, εἰ μὴ πρῶτον ἐξάρη ἀπ' αὐτῆς τὰ περιπολούμενα ὕδατα. δεῖ οὖν νηχομένην αὐτὴν τοῖς ὕδασι, μὴ ἐὰν αὐτὴν ἐνυγρον, ἵνα μὴ ἀποφρενωθῇ, ἵνα μὴ δύνῃ ἀφ' ἡμῶν, ἵνα τὴ τῆ ὑγρᾶ οὐσία ἐνύγρως ἀπομείνῃ. ἀλλ' ἄρωμεν ἀπ' αὐτῆς τὴν τῶν ὑδάτων περιοχὴν, ἵνα θεασώμεθα τοῦ κάλλους αὐτῆς τὴν πολλὴν εὐοπτίαν. πῶς οὖν τὴν τοῦ ὕδατος ἄρσιν ποιησόμεθα; πῶς ἀπώσομεν ἐκ τῆς τοῦ ὕδατος μετουσίας; πῶς αὐτὴν διασπίσομεν, ἵνα οὕτως εὐχερῶς τοῦ ὕδατος γένηται ἄρσις; πανοπλίας χρῆ καὶ ἀνδραγαθίας. τίς ἰκανὸς πρὸς τοῦτο; τίς δυνατὸς ἐξάραι τὴν πλημμυρίζουσαν τῶν ὑδάτων διαδρομὴν; τίς οὕτως εὐρίσκειται πρὸς ἀντίστασιν; τίς πρὸς διακονίαν εὐτρεπίζεται; εὐρηται ἢ εὐλυσία τοῦ πράγματος, ἵνα φανερώς ἴδωμεν τῆς νεφέλης τὴν ὠραιότητα. αὕτη ἐστὶν ἢ διὰ τοῦ θείου ἔμπειρος παρύπτησις. ὡσπερ γὰρ ἢ διὰ τοῦ ὕδατος ἐπὶ νῶ ἐστὶν<sup>29</sup> ἀπόπλυσις, οὕτω<sup>30</sup> καὶ διὰ θείου ἀποκύθαρις τοῦ παντός γίνεται. τοῖς γὰρ θείοις ὕδασι ἀποπλύνοντες νῦν καὶ καλῶς οἰκονομήσαντες, πάλιν διὰ πυρός καὶ θείου ἀποκαθαρίσομεν, ἵνα ἀποκαλυφθῇ τὸ τῆς ὀ σώμα, ἵνα ἴδωμεν ἡλιόδωρον<sup>31</sup> νεφέλην. ὦ σοφίας θεοῦ ἀνέκφραστα μυστήρια, ὦ πλουσίαι δωρεαὶ τοῖς ἡγαπηκόσι τὸν κύριον, ὦ βάθος<sup>32</sup> πλοῦτου καὶ σοφίας καὶ γνώσεως μυστηρίων. εἰ τὰ παρόντα τοιαῦτα θαυμαστὰ καὶ ἐξαισία, ποταπὰ τὰ αἰώνια, ἃ οὐδεὶς νοῦς ἐξηγήσασθαι δύναται, εἰ τὸ ἐνυλον ἔργον ἀρρητῶ τινὶ λόγῳ τοιοῦτον ἡμῖν φαίνεται, ποταπὰ τὰ ἀκίρατα ἀγαθὰ καὶ ἀνεξιχνίαστα κάλλη, ἃ οὐδεὶς ἰσχύει θεάσασθαι, ὑμῶ καὶ προσκυνῶ καὶ δοξολογῶ σε, τρίας ὑπερούσιε καὶ ὑπεράγαθε καὶ ὑπέρθεε, τίς ἐξειπεῖν δύναται πρὸς ὕμνον τῶν θαυμασίων σου, ὡς ἐμεγαλύνθη. τὰ ἔργα σου, κύριε, πάντα ἐν σοφίᾳ ἐποίησας.

<sup>25</sup> M.—... τὸ ἐν ἐπίστημον ἔργον, . . . .

<sup>26</sup> M.—ἐποδηγηθέντες . . . .

<sup>27</sup> M.—ἰναπαύεται . . . .

<sup>28</sup> M.—ἰκμάδας.

<sup>29</sup> M.—ἐπὶ νω ε.

<sup>30</sup> M.—οὕτως.

<sup>31</sup> M.—ἡλιόθρονον.

<sup>32</sup> M.—βάθους . . . .

perfectly fulfilled. 'For nothing is left remaining except the vapour and the raising of the water.' Having been wisely led on the path with respect to the way of the vapour, I will pursue my speech upon the raising of the water. What then is this which has been brought in? What is this raising of the water? Tell us, O guide: fulfil the gifts of thy grace. Enlighten our dim-sighted eyes, make plain the articulate substance of your doctrine, what is this raising of the water? And he is not silent on this matter: he says, the unmixed beauty does not receive into itself matter<sup>67</sup>. The immaterial being, it is a single composition, the good thing of a myriad names. For being of a single essence, it is reduced into itself. Around it, it extinguishes the single ray<sup>68</sup>. He does not wholly put in the moistening juices. For he did not perceive the loss, the life of the liquids. For he rejects the flowings of the water. For how is one to see the motion of that which does not shake off these things? Nothing is able to be filled full of it, unless first the ambient waters are drained dry from it. It is therefore needful that it should be swimming on the water, if it be not itself watery; that it may not be taught, that it may not be able, <to vanish> from us, that it may remain moist in a moist being. But we remove from it the embrace of the waters that we may see the great comeliness of its beauty. How shall we push it back from the participation with the waters? How shall we separate it, that there may easily be a raising of the water? There is need of panoply and courage. Who is man enough for this? Who is able to dry up the overflowing stream of waters? Who is to be found for the contest<sup>69</sup>? Who is ready for service? There is found a purgation of the matter, so that we may clearly see the beauty of the cloud. The same is the practical gentle coction by means of sulphur. For just as the washing with water is in the mind<sup>61</sup>, so also is the purification of the All by sulphur<sup>70</sup>. For washing with the divine (sulphurous) waters now and managing the process fairly, we purify it again by fire and sulphur, that the body of the moon (*or* silver) may be revealed, that they may see the cloud the gift of the sun<sup>71</sup>. O unspoken mysteries of a wise God, O rich gifts to those who have loved the Lord, O depth of wealth and wisdom and gnosis of the mysteries. If the present things are such marvels and extraordinary, from what source are everlasting things which no mind is able to explain? If the material work is displayed thus to us by some unspeakable discourse, from what source are thy undefiled good and unfading beauties, which no one is capable of perceiving? I hymn and adore and glorify thee, triad superior to being, more than good and more than god. Who can speak forth to hymn thy marvels, that they may be glorified? All thy works, O Lord, thou hast made in wisdom.

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- <sup>1</sup> M. Berthelot, *Origines de l'Alchimie*, Paris, 1885, xiii, 100, *et passim*.
- <sup>2</sup> H. Kopp, *Beiträge zur Geschichte der Chemie*, pp. 437 ff.
- <sup>3</sup> Kind, *Pauly-Wissowa. Real-Encyclopädie*, 3. A. ii, p. 2404.
- <sup>4</sup> Bussemaker, *Revue de Philologie*, i, 1845, 415.
- <sup>5</sup> Dietz, *Scholia in Hippocratem et Galenum*, i, 1, Preface, xix.
- <sup>6</sup> K. Krumbacher, *Geschichte der Byzantinischen Literatur*, 2<sup>e</sup> Auflage, p. 621. [Müller, *Handbuch der Klass. Alt.-Wiss.* 9, i.]
- <sup>7</sup> Usener, *Ind. Lect. Bonn*, 1879. *De Stephano Alexandrino*, Bonn, 1880.
- <sup>8</sup> v. Lippmann, *Entstehung und Ausbreitung der Alchimie*, ii, 204.
- <sup>9</sup> v. Lippmann, *op. cit.*, i, 103 ff.
- <sup>10</sup> M. Berthelot, *Collection des Anciens Alchimistes Grecs*, iii, 378 ff. This work is referred to hereafter as *Collection*.
- <sup>11</sup> Edition of 1871, p. 354.
- <sup>12</sup> The nature of the supposed hiatus in the MSS. of the ninth lecture of Stephanos is of importance for establishing the filiation of the MSS., and has been the subject of controversy. Berthelot, *Collection*, i, p. 179 ff. ; Reitzenstein, *Zur Geschichte der Alchemie und des Mystizismus*, in the *Nachrichten der kgl. Gesellschaft der Wissenschaften zu Göttingen, Phil.-hist. Klasse*, 1919, pp. 1-37 ; O. Lagercrantz, *Catalogue de Manuscrits Alchimiques Grecs*, ii, 338 ff.
- <sup>13</sup> The text of MS. Marcianus Græcus 299 (v. p. 118) differs in a few minor respects from that of Ideler.
- <sup>14</sup> ἐρόλου. Not in the lexicons consulted.
- <sup>15</sup> περιτομή. The word has almost invariably the sense of 'circumcision'.
- <sup>16</sup> H. Kopp, *op. cit.*, p. 439, note 92, gives the title as : C. G. Gruner dissertationem inauguralem viri cl. C. G. Gesner . . . habendam indicit. Jena, 1777.
- <sup>17</sup> M. Berthelot, *Origines de l'Alchimie*, p. 105.
- <sup>18</sup> I am glad to be able to express my thanks to Professor J. R. Partington for his courtesy in allowing me to consult his copy.
- <sup>19</sup> The following works contain Pizzimenti's translation *without* the work of Stephanos :
- (1) Antonii Mizaldi Monluciani Galli, Medici, Memorabilium, sive Arcanorum omnis generis, per Aphorismos Digestorum, Centuriæ IX. Et Democritus Abderita, De rebus Naturalibus & Mysticis. Cum Synesii, et Pelagii Commentariis. Interprete de Græca lingua, Dominico Pizimentione Vibonensi, Italo. . . Colonia, Apud Joannem Birckmannum Anno D.M.LXXII.
- (2) Joh. Joach. Becheri D. . . Opuscula Chymica Rariora Addita nova Præfatione ac Indice locupletissimo multisque Figuris æneis illustrata, a Friderico Roth-Scholtzio. siles. This work contains near the end :—  
Democritus Abderyta Græcus De Rebus Sacris Naturalibus et Mysticis. Cum Notis Synesii et Pelagii. Norimbergæ Apud Hæredes Joh. Dan. Tauberi, M.DCC.XVII.
- (3) Fabricius Bibliothecæ Græcæ Volumen Octavum, Hamburg, MDCCXVII, contains Synesius de Arte Magna in Greek with the Latin translation of Pizimenti.
- <sup>20</sup> See note <sup>61</sup>.
- <sup>21</sup> J. Ruska, *Arabische Alchemisten* (Heidelberg, 1924), i, 32 ff.
- <sup>22</sup> Berthelot, *Origines de l'Alchimie*, p. 208.

<sup>23</sup> φύσις, translated herein as *nature*, is the chief scientific conception of Greek Alchemy. The φύσις of a body is in the philosophic sense *that combination of the four elements which characterises it and gives rise to its properties*.

The notion of the natures of the metals and their interplay is found in the earliest alchemical works. Hermes is said to have written a book on *The Natures*, and in the work attributed to Isis we find allusion to this conception. In the *Physica et Mystica* of Demokritos these ideas are developed and we find the phrase, so much quoted by later authors, Ἡ φύσις τῇ φύσει τέρπεται, καὶ ἡ φύσις τὴν φύσιν νικᾷ, καὶ ἡ φύσις τὴν φύσιν κρατεῖ—'The Nature rejoices in the nature, the nature conquers the nature and the nature dominates the nature'. The phrase is probably later than the practical part of the work of Demokritos (Sherwood Taylor, *Ambix*, i, 1937, 38, 39) but is of considerable antiquity. Synesios attributes it to Ostanos, the reputed master of Demokritos. The introduction to the work of Isis also contains the phrase. Demokritos is also quoted as saying that 'The nature taking on the proper opposite quality becomes solid and fixed, dominating and dominated'; he also speaks of the nature of a substance being 'turned outward' or 'turned inward'. In the alchemical works the word seems to denote very nearly what we would today call the properties of a substance. In the union of two metals, when alloyed, there might be a strife between the sets of properties of the two in which one was conquered. Thus when silver and copper were alloyed, the white 'nature' of the silver overcame the red 'nature' of the copper. The natures might also blend as in the making of a golden-brown alloy from copper and tin: here the nature of copper might be thought to blend with or 'rejoice in' that of the alloying substance (cf. J. R. Partington, 'The Discovery of Bronze', *Scientia*, Oct. 1936, 198). The word φύσις was widely applied in theology at the time of Stephanos, when controversy as to the relation of the human and divine *natures* of Christ was a burning question in Byzantium. This application of the word was probably present to the mind of Stephanos in writing these passages.

<sup>24</sup> Τὸ πᾶν: 'The All'. This phrase occurs continually in Greek Alchemy and philosophy and appears to apply to the totality of things. The assertion, ἔν τὸ πᾶν, found in the Chrysopœia of Kleopatra and implying a single Unity underlying all nature, is a central doctrine of Alchemy.

<sup>25</sup> Ἔν ἀσώματον σῶμα . . . : 'O disembodied body'. The metals were said in Greek Alchemy to possess a body and soul, though it is hard to say how far this was believed to be allegorical, and how far a matter of fact. The metal itself was the living body and soul. Its apparent destruction by chemical reagents was the separation of the soul—the metallic properties—from the body, which was said to die. The metals were 'disembodied' in a chemical reaction and their destruction, with its accompanying blackening and disintegration, was considered to be the death of the metal. The dead metal (in reality some compound) could be revived (reduced once more to metal), whence the oft-repeated aphorism 'Unless you disembody the bodies and embody the disembodied, that which is expected will not take place'. The psychological interpretation of this is obvious and was no doubt present to the mind of Stephanos. (Note <sup>61</sup>).

<sup>26</sup> Γένος, εἶδος: 'genus, species'. These terms and their application in Greek Alchemy have been discussed at length by M. Stephanides ('La Naissance de la Chimie', *Scientia*, Mar. 1922, xxxi, 189). The *genera* appear to have been metals which had a proper nature (φύσις), the *species* were substances such as stones, salts, etc.: they were not bodies (σώματα) and had no proper nature. The system is worked out in some detail by 'Philosophus Anonymus' (VIII cent.), but his explanation of the terminology seems not altogether to tally with the usage of earliest alchemists.

<sup>27</sup> Θεῖον ἄπυρρον. This term (usually ἄπυρρον) is used by Dioskurides and Pliny, and means 'native sulphur'. It is much used in the alchemical texts and chemical papyri and its meaning is usually as above, though its mention by Zosimos as a whitening agent may indicate orpiment.

<sup>20</sup> Ὠκεανίζουσα. Not in the lexicons consulted.

<sup>21</sup> Ἐξίρτισμα. Not in lexicons consulted. Piz. translates as *appendix*.

<sup>22</sup> *Id.* Χρυσόροφον: M., Χρυσόροφον. The word appears to have the meaning *golden-roofed*. Piz. translates the passage, *O auri fluens caelestis fons*. The word occurs again (p. 124), which seems to render improbable the conclusion that it is a copyist's error for χρυσόλοφον or χρυσοφόρον.

<sup>23</sup> Piz., *auream gerens caesariem*.

<sup>24</sup> The dispute as to whether it was by means of several species (εἶδη) or by one alone that the mystery was accomplished is obscurely argued in several alchemical texts, notably 'On the Assembly of the Philosophers' (Berthelot, *Collection*, ii, 35, 18) and 'That the Species is Compound and not Single and what is its Management' (*ibid.*, 272–275). The former, a fragment, attributes to The Philosopher—Demokritos—the view that a single species is employed: the latter indicates that several ingredients are required. In this passage, as in the dialogues of Kleopatra, the 'single natural <thing>' would seem rather to be some supra-material universal entity.

<sup>25</sup> Ἀποθανιώση. Not in lexicons consulted. Piz., . . . *ubi mortale corpus immortalē reddiderit*.

<sup>26</sup> Μαγνησία. No concept in Alchemy is more complex than that of *Magnesia*. The word is used more than a hundred times in Greek alchemical texts, and its nature remains wholly obscure. Pliny (*H. N.*, xxxvi, 25) distinguishes five kinds of *magnes* (quoting Sotacus). They are of two kinds, 'male' and 'female'. Those of Magnesia in Macedonia are red and black, the Bœotian stones are of a reddish tint. That of the Troad is black and 'sine viribus' (destitute of attractive power). That of Magnesia in Asia is white, does not attract iron and resembles pumice. The best kinds were somewhat bluish. The Ethiopian was the best of all. These substances, with the exception of the products of the Troad and Magnesia in Asia, all appear to be magnetic oxide of iron (*v.* K. C. Bailey, *The Elder Pliny's Chapters on Chemical Subjects* (London, 1932), pp. 248–250).

The alchemical Magnesia seems to have no resemblance to Pliny's *magnes*. The substance referred to could be reduced to a metal which resembled 'molybdochalkos' (probably a lead- or antimony-copper alloy). Magnesia was to some extent volatilized by heat, for we hear of 'mercury from magnesia'. The 'body of magnesia', the metal (note <sup>25</sup>) obtained by its reduction, was said to be equivalent to the 'tetrasomia' or alloy of the four base metals.

All the passages referring to magnesia are exceedingly arcane and obscure; we need not suppose that all the commentators had any clear notion of its nature. Stephanos here seems to identify it with the universal nature underlying the whole universe.

<sup>27</sup> Χρυσοκοράλλος (χρυσοκοράλλιον). The meaning of this word is doubtful. A recipe of Demokritos (Berthelot, *Collection*, ii, 44, 4) prepares 'chrysocorallos reduced to metal'. A red gold may be intended, for its composition includes copper. Chrysocorallos itself is prepared in a very complex recipe (Berthelot, *Collection*, ii, 56, 16). It does not appear to be a metal, but a pigment or coral-like ornamental material. The sense appears to indicate a material superior to gold.

<sup>28</sup> Φέγγιτης. The word does not occur elsewhere in the Greek alchemical texts. In classical literature (Pliny, Suetonius) a hard stone, possibly onyx marble, seems to be intended (K. C. Bailey, *op. cit.*, p. 268). No doubt Stephanos uses the word as equivalent to 'moonstone'.

<sup>29</sup> The odd number, one, the natural monad, was the source of all in the Pythagorean philosophy of Stephanos. See beginning of Lecture II, p. 127, and elsewhere.

<sup>30</sup> Piz., *tunc seditionis certamina sedas*.

<sup>39</sup> The reading *μεγαλία* (*μεγαλεία*) is supported by Piz. who translates *magnalia*.

<sup>40</sup> Throughout the somewhat obscure passage which follows Stephanos is making the point that everything, however complex, is derived from a *single* source. All numbers are derived from the monad 1; all figures from the centre; all music from the single instrument; all light from a single light, presumably the sun. The play on *μονάς*, the monad, and *μένειν*, to remain, is emphasized by italics.

<sup>41</sup> *διὰ πασῶν* as printed by Ideler appears to give better sense than *διαπῶσων* as given by M. The passage appears to be corrupt.

<sup>42</sup> *ληχανόρτες*. Not in lexicons consulted, and here taken as verb from *ληχανός*.

<sup>43</sup> Zosimos quotes this phrase as emanating from Hermes (Berthelot, *Collection*, 125, 10):—

'For what does Hermes intend when he again prescribes that which falls from the waning of the moon, where it is found and where it is treated and how it has an unburnt nature?'

The passage continues with a discussion of the analogy of magnesia to the moon and a comparison of its volatilization or liquefaction to the waning of the moon.

<sup>44</sup> *Αφροσελίγον*. Aphroselenon is mentioned some twenty times in the alchemical corpus. It appears to bear three senses. First is that of a soft white mineral such as selenite or mica. In this sense the word is used by Dioskurides (v. 158). Secondly it is used for a substance capable of whitening metals, perhaps arsenic trioxide obtained by sublimation (Berthelot, *Collection*, ii, 166, 7; 307, 14). Finally Zosimos regards it as being a compound of Aphrodite (Venus, copper) and Selene (the Moon, silver or mercury).

In this passage Stephanos is probably using the term on account of its connection with the moon and whiteness.

<sup>45</sup> It is uncertain whether *ἐφ'αὐς* is to be taken with the preceding words, as is indicated by Ideler's punctuation, or with those which follow it according to the punctuation of M.

<sup>46</sup> *Πυρίτης*. Pyrites is frequently mentioned in alchemical recipes, though it is hard to reconcile properties of the modern minerals known by that name with these. Zosimos, quoting Agathodaimon, states that 'pyrites is a general term for white and blood-coloured stones'. The Achæan and Albanian varieties are not mentioned by earlier alchemical authors.

<sup>47</sup> *Χρυσόζωμιον*, 'Liquor of Gold', is mentioned about a dozen times in the alchemical texts. In the work of Demokritos (Berthelot, *Collection*, ii, p. 45, ll. 10, 17) it may represent (i) a yellow varnish, (ii) a liquid containing sulphides and capable of giving a golden tint to silver or other alloys (Sherwood Taylor, 'A Survey of Greek Alchemy', *Journal of Hellenic Studies*, 1 (1930), 130).

<sup>48</sup> *Χρυσόκοσμος*. Not in lexicons consulted.

<sup>49</sup> *Ἐισκριτήρ*. Not in lexicons consulted.

<sup>50</sup> The formula contains two letters or symbols which do not appear to be a part of the ordinary Greek alphabet. These symbols are not included in the list given in M. and reprinted by Berthelot (*Collection*, i, 104 ff.) or by Zuretti (*Alchemistica Signa, Catalogue de Manuscrits Alchimiques Grecs*, viii, 1932). These are reproduced by Ideler by means of the Coptic letter **Ϣ**, but the identification is doubtful.

Pizimenti omits the formula and translates '*qui in luna videndi sensu percipitur*'.

<sup>51</sup> This is attributed to Agathodaimon in the text *Περὶ τοῦ ὅτι ταῦτα περὶ μιᾶς βύφης ἢ τέχνη λελάληχεν*. It does not seem to occur in the texts of or quotations from Demokritos. In the above text *εἶτα λευκῶσιν* is in place of *ἐφ' ὑστερον λεύκωσιν* given by Stephanos. The possible chemical significance of this procedure is discussed by the writer elsewhere (Sherwood Taylor, *op. cit.*, 133, 135).

<sup>53</sup> *I. e.*, Demokritos.

<sup>53</sup> Ἴόν: *Ios*. The conception of *ios* is important in Greek Alchemy. In non-chemical works it bears the sense of *rust* or *venom*. In the chemical papyri the meaning seems to be simply 'verdigris' or other incrustation on a corroded metal. This is also its most usual sense in alchemical texts. The removal of *ios* or cleaning of metal was termed ἐξίωσις. Maria and Zosimos used the term *ios* almost in the sense of *chemical compound*. The notion of the potency of the metal being present in the *ios* in the same way as that of the snake is in its venom seems to occur and is affirmed by the use of the word in the symbols of the Chrysopœia of Kleopatra. (Berthelot, *Collection*, i, 132, 133; Sherwood Taylor, *Ambix*, i, 43; J. R. Partington, 'The Discovery of Bronze', *Scientia*, Oct. 1936, 198.)

<sup>54</sup> ῥύτιδος. ῥυτίς, *wrinkle*, may conceivably be an error for ῥύσις, *liquid*. Piz. translates as *sordis*. The papyrus Ebers speaks of the *wrinkled crust* (of slag or oxide) which forms on melted copper (J. R. Partington, *Origins and Development of Applied Chemistry*, p. 191).

<sup>55</sup> Demokritos, *Physica et Mystica*, § 29 (Berthelot, *Collection*, ii, p. 53, l. 12). The quotation is not exact. Demokritos has ὑπολείπεται; Stephanos, ὑπολείπται.

<sup>56</sup> *I. e.*, Demokritos.

<sup>57</sup> Κιλικίας τῶν κρόκον. The word κρόκος, *saffron*, was used in the alchemical texts in such a way as to make it probable that in many instances saffron was employed as a yellow dye liquor which was used to stain a metal, afterwards to be lacquered. The practice survived to the seventeenth century; cf. John Donne, *Elegie VIII*, The Comparison,

'And like vile lying stones in saffroned tinne.'

Saffron of Cilicia is mentioned by Pliny (*H. N.*, xxi, 17, 6) as the best variety.

In some passages κρόκος may represent a mineral (cf. *crocus martis*=ferric oxide). Demokritos in one passage says 'Saffron has the same action as the vapour'.

<sup>58</sup> Ἀναγαλλίδος βοτάνη. The word is usually translated 'pimpernel' (Dioskurides, ii, 209). It is mentioned, apparently as a yellow dye-plant, by Demokritos in passages from his lost works quoted by Synesios (Berthelot, *Collection*, ii, 66, 9) and Zosimos (*ibid.*, 160, 7). Its character as a dye-plant is confirmed in its mention with many such plants in a list in the work of Moses (*ibid.*, 306, 24). Synesios quotes Demokritos as speaking of 'the flower of the anagallis which has a blue flower'. Synesios had little understanding of the early technical processes of Demokritos, and explains the latter's use of the word as signifying that the water should be driven off (or distilled) (τὸ ἀναγαγεῖν τὸ ὕδωρ). In the *Papyrus Holmiensis* 'The juice of the anagallis which has a blue flower' is used for tinting pearls.

<sup>59</sup> ῥά, *rhubarb*, is mentioned by Demokritos as a material for the preparation of a dye-liquor, and in fact the root has a deep yellow colour owing to the chrysarobin contained in it. The use of the material wholly puzzled Synesios, who supposed that Demokritos by the use of the phrase τὸ πόντιον ῥά intended to draw a fanciful analogy between the river Rha flowing into the Black Sea (Πόντος) and the liquefaction of a solid.

<sup>60</sup> Χολῆς τετραπόδων καὶ κνωδάλων τινῶν. The gall of various creatures is frequently prescribed as a yellow colouring matter in the chemical Papyri (*P. Leyd.*, 39, 63, 74, 75. *P. Holm.*, δ 2; ε 20; ζ 32; θ 11, 16, 20, 38; η 31; ξ 21; ια 41, ιδ 17) and is employed in the same fashion by Demokritos (Berthelot, *Collection*, ii, 45, 8), who in this passage mentions only calves'-bile. The work of Iamblichus, which the author has elsewhere conjectured to be a part of a hypothetical Demokritan treatise, mentions the bile of the ichneumon, fox, black-footed cock and camel. If in the time of Stephanos this work was attributed to Demokritos, the phrase 'of quadrupeds and certain beasts' would be explained. Olympiodoros (*ibid.*, 78, 18) says that Demokritos wrote on the gall of fishes.

<sup>61</sup> To the author's knowledge this is the earliest passage wherein it is implied that Alchemy is not a quest to be carried on in the laboratory. In this lecture Stephanos indicates clearly that he views Alchemy as a mental process (pp. 123, 131, 133). It does not of course appear from the passage whether this is Stephanos's own view of Alchemy or whether he is putting forward an earlier tradition. The latter would appear to be the more likely as Stephanos shows little evidence of original thought.

<sup>62</sup> This phrase does not seem to be contained in the existing work of Demokritos.

<sup>63</sup> *Θείον ὕδωρ*. *Θείον ὕδωρ* may be translated as the 'divine or sulphurous water', for *θείον* has both meanings. This substance was the chief reagent of Greek alchemical practice. It is mentioned also in the Leyden Papyrus, 89, where it appears to be a solution of calcium polysulphide. This was probably the earliest meaning, but later the name was applied to all liquids useful in the Art, much as the modern chemist has extended the meaning of the term salt from the significance of 'common salt' to cover all similar combinations of metals and acids. It appears to have had the power of corroding and blackening metals and of colouring them superficially: these properties are appropriate to a polysulphide solution. On the other hand the term *θείον ὕδωρ* was often applied to a distillate of some kind. The whole question is complex and beyond the scope of a commentary.

<sup>64</sup> See note <sup>61</sup>.

<sup>65</sup> *Κελτική νάρδος*, Celtic nard, is mentioned by Pliny and Dioskurides, and may be *Valeriana celtica*.

<sup>66</sup> *Βρεταννική μέταλλος*. Presumably tin (Partington, *Origins and Development of Applied Chemistry*, pp. 80, 449).

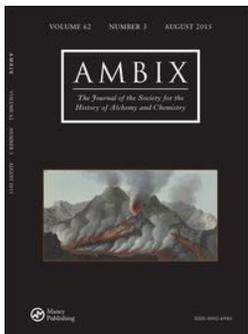
<sup>67</sup> This phrase is not found in the existing works of Demokritos. The phrase has a Platonic ring.

<sup>68</sup> M. shows a stop after *ἀύγην*. Piz., *Ipso uno nitore conquiescit. Humores autem humidam materiam reddentes non adhibet*. The notion may derive from the neo-Platonic notion of the ray of light descending from the divine and ending in matter.

<sup>69</sup> The whole passage is obscure. Viewed from the practical standpoint the 'raising of the waters' appears to be the evaporation of the corrosive liquid used to disintegrate the metal, so leaving a dry metallic compound. But this sense is probably not intended by Stephanos, for the whole passage is couched in terms more appropriate to the mystical Alchemy of the latest period than to the technical Alchemy of Demokritos.

<sup>70</sup> A 'burning of copper with sulphur' is several times described, e. g. by Maria (Berthelot, *Collection*, ii, 182, 6), but it does not seem to be alluded to as a purification.

<sup>71</sup> *Ἡλιόθορον* is given in M.; *ἡλιόδωρον* by Ideler. The former word is not in the dictionaries, nor can I assign any meaning to the *-θορον* suffix: *ἡλιόθρονον*, 'seat of the sun', is a possible emendation.



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## The Alchemical Works of Stephanos of Alexandria

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## THE ALCHEMICAL WORKS OF STEPHANOS OF ALEXANDRIA.

TRANSLATION AND COMMENTARY by F. SHERWOOD TAYLOR, Ph.D., M.A., B.Sc.

## PART II.

LETTER OF THE SAME STEPHANOS TO THEODOROS <sup>72</sup>.

Concerning the field, know that it has many unprofitable farmers, and unless you cast these out, you will not be able to receive profit from the field. There are all the six brothers <sup>73</sup> attendant on claudianos <sup>74</sup> and the others together. Except the two useful ones, they are not one. And all the leucargenos <sup>75</sup> is useless. For the field has a serpent <sup>76</sup> and he dries up the place with his breath, where also men grow feeble. And I saw him and the spotted scales of his body. The beginning of his tail was white as milk, but his belly and back were saffron-coloured and his head was greenish-black. You should divide the field into three, the four brothers <sup>73</sup> one part and the great stone one part, for thus the ancients attempted to do with the field, as I found out. For so does Theodoros the *agens in rebus* <sup>77</sup>, and so teaches Jakobos the lapidary <sup>78</sup>. True is a certain moist vapour <sup>79</sup> and the dry vapour. For the moist is sublimed by the *phanoi* <sup>80</sup> which have nipples. But the dry vapour <is distilled> by the pot and bronze cover, as is the white vapour from cinnabar <sup>81</sup>. Therefore if you imbibe the dry vapour with the moist vapour, you perfect the divine work. For know that all the essences and the metals are also vapours, or rather become them, for the same, being imbibed, become moist vapours. The Scythian comaris <sup>82</sup>, which is mixed with new vapour, perfects all things. And the legendary chemistry is one thing, and the mystical and hidden is another. For the legendary chemistry is confounded in a multitude of words, but the mystical is operated by the word of the Creator of the world, that the man who is holy and born of God may learn by the direct operation and by theological and mystical words.

THE SAME STEPHANOS, ON THE MATERIAL <sup>83</sup> WORLD, LECTURE III WITH  
THE HELP OF GOD.

How the <world> is fashioned and how the divine parts of it, being well purified, fly upwards, which being level draw up after them the more level parts <sup>84</sup>. For the method of the mystical chemistry consists of symbols ~ <sup>85</sup> and what is required is operated by method. So also the bodies, being made metallic and being changed from the contrary nature, become by a certain

ἀποτελεῖ ☉ καὶ διὰ τῆς θείας ἐργασίας ἡ τέφρα καὶ ἡ καδμεία καὶ ἡ σποδὸς τῶν λευκίνων ξύλων. καὶ τὰ θειώδη οὕτω τεφρωθέντα θεῖον πάλιν ἔργον καὶ ὕδωρ θεῖον ἄθικτον διὰ τῆς αὐτῶν τέφρας ποιούσιν εἰς παλιγγενεσίαν. ἔστιν οὖν ἀντὶ πολλῶν κατανοήσαντα ὠρεῖν<sup>6</sup>, ὅτι ἡ τέφρα ἢ πολλὰ ποιούσα ἔργα μάλιστα τὰ βαφικὰ ἐὰν μὴ ὀλίγον ἢ τίτανος καὶ ἡ ἄσβεστος καὶ ἡ γύψος καὶ ἡ φέκκλη καλουμένη, καὶ τὸ ἀφροσέληνον καὶ ὅσα τοιαῦτα εἶδη καίόμενα καὶ ἀποτεφρούμενα ποιούσι σποδὸν λευκὴν, ἔργα μεγάλα ἐπαγγέλλονται καὶ εἰς ἰατρείας καὶ εἰς χρωτῆσεις πάσας τὰς βαφικὰς μέχρι καὶ ὑέλων καὶ μαρμάρων· καὶ ἵνα μὴ δειλανθῆς ἀπὸ ἀπειρίας, καὶ γὰρ τοῦ Ἑρμοῦ λέγοντος, ἐὰν ἴδῃς τὰ πάντα σποδὸν γινόμενα, νόει ὅτι καλῶς ἐσκεύασται· ἡ γὰρ σποδὸς δυνάμει ἔστιν πληρῆς καὶ ἐνεργείας. ὡσπερ γὰρ τὰ ξύλα τὰ ποιούντα στακτὴν ἄκαυστα γίνονται, τοῦτέστιν ἀποκεκαυμένα, καὶ ἀποτεφρούμενα, καὶ συμμειγνέντα τῷ χρυσοζωμίῳ μηκέτι καίόμενα, ἀλλὰ ἐνεργοῦντα εἰς πάσας τὰς βαφάς, μέχρι καὶ ἔργων καὶ μαρμάρων καὶ ὑέλων καὶ λίθων καὶ ξύλων καὶ δερμάτων καὶ πάντων ὁμοῦ τῶν χυτῶν σωμάτων, καὶ ἀπυτεφρωθέντα<sup>7</sup> πολλὰ ἔργα καὶ θεῖα ποιούσιν. καὶ χρώματα διάφορα ὅσα ἀπὸ  $\text{♄}$  κρόκου<sup>8</sup> καὶ ὅσα ἀπὸ λιθαργύρου καὶ πάμμου<sup>9</sup> τεφρούμενα καὶ ἐξαγαγόντα ἔξω τὴν φύσιν πάλιν εἰς τὸ φανερόν, τὰ μὲν ἐνεργά, τὰ δὲ δυναμιν δι' ἐτέρας ὁμίλιας δεικνύοντα τὴν ἐνέργειαν. καὶ ὅσα μὲν οὖν ἔχει ὑμῖν ἀποδείξαι ἀπὸ τῶν τεφρωμένων καὶ σποδωμένων, ἔσται ἰατρικῆς ἐπιστήμους. ὅσα δὲ καὶ εἰς παλιγγενεσίαν ἀρχονται<sup>10</sup>, εἰς εὐσύνετον τέχνην. μάλιστα οἱ τὴν σποδὸν τῶν ἀγοραίων βοτανῶν τῇ ἴσῃ συνεψούντες· καὶ τὰς σποδοὺς τῶν σωμάτων καὶ ὑέλων τῇ ἴσῃ συγχωνεύοντες· ὡς οὐ δεῖ δειλιάειν ἐπὶ τῶν καιομένων καὶ τεφρουμένων τούτων τῶν σωμάτων. πάλιν γὰρ ἔχονται<sup>11</sup> εἰς τινὰ δύναμιν καὶ ἐνέργειαν καὶ παλιγγενεσίαν, φύσιν ἔχοντα μιμητικὴν τοῦ παντός κόσμου καὶ τῶν στοιχείων αὐτῶν ὅθεν καὶ τὴν παλιγγενεσίαν ἔχοντα, πνεύματός τινος μετουσίαν, ὡς ὑλαίῳ πνεύματι γινομένων. οὕτω καὶ ὁ χαλκὸς ὡς ἄνθρωπος καὶ ψυχὴν καὶ πνεῦμα ἔχει· ταῦτα γὰρ τὰ χυτὰ σώματα καὶ τὰ μεταλλικά. ὡς δ' ἂν ἀποτεφρωθῶσιν ὁμίλησαντα τῷ πυρὶ, πάλιν πνευματοῦνται, πυρὸς αὐτοῖς χαριζόμενον τὸ πνεῦμα. μεταλαμβάνοντα δηλονότι καὶ ἀπὸ τοῦ ἀέρος τοῦ τὰ πάντα ποιούντος, ὡς καὶ τοὺς ἀνθρώπους, καὶ τὰ πάντα ἐκείθεν δίδονται τὸ ζωτικὸν πνεῦμα καὶ ἡ ψυχὴ, οὕτως καὶ τὰ χυτὰ σώματα σὺν τῶν μεταλλικῶν ἀποτεφρωθέντα, μεθόδῳ τινὶ ἀνακομίζονται τὸ πνεῦμα, τῷ συγγενῇ πυρὶ ὡσπερ ἀναγινόμενα. πάντα δ' ὁμοῦ τὰ στοιχεῖα καὶ γενέσεις καὶ φθορὰς καὶ μεταβολὰς καὶ ἀνακάμψεις ἔχουσιν ἀπὸ ἐτέρου εἰς ἕτερον. οὕτως καὶ ὁ χαλκὸς καυθεὶς καὶ ἀνακαμψθεὶς ῥοδίνῳ ἐλαίῳ καὶ ἐκτιναχθεὶς, καὶ πολλὰκις τοῦτο παθὼν, χρυσοῦ κρείττων ἀσκίαστος γίνεται. τοῦτο δὲ τριπλοῦν χρὴ ἐκδέχεσθαι εἰς τε τὸ ἄβαφον καὶ τὸ βαπτόμενον, καὶ τὸ βάλπτον. καὶ γὰρ διὰ βαφῆς ἀνακάμπεται, κἄν τε θείως, κἄν τε ἰατρικῶς. καὶ ἐπὶ τῆς τοῦ

<sup>6</sup> M.—εὔρεϊν.

<sup>7</sup> M.—ἀποτεφρωθέντα.

<sup>8</sup> M.—Sign of Saturn followed by κρόνου.

<sup>9</sup> M.—ψάμμου.

<sup>10</sup> M.—ἔρχονται.

<sup>11</sup> M.—ἔρχονται.

method level and ætherial. O seed sown in the earth of silver, it also perfects gold, and by the divine work <so do> the ash<sup>86</sup> and cadmia and ash of white poplar wood<sup>87</sup>. And the sulphurous things, being thus reduced to ash, make the work sulphurous again, and by their ash make the divine water untouched<sup>88</sup> for rebirth. The understanding person in opposition to the multitude may find that the ash—which does many works especially concerned with colouring if, to no small extent, chalk and lime and gypsum and what is called tartar, and aphroselenon and the other burnt and incinerated species make a white ash—promises wonderful things both for healing and for all the colorations by dyeing, both of glasses and marbles. And that you may not be made cowards by ignorance, hear what Hermes<sup>89</sup> says, ‘If you see the All becoming ash, know that it has been well prepared. For the ash is full of power and virtue.’ For just as woods which are made into lye become incombustible, that is to say burnt away and reduced to ashes, these being mixed with the liquor of gold<sup>90</sup> are no further burnt, but are operative for all sorts of tinctures, of marbles and glasses and stones and woods and skins and likewise of all fusible bodies. And being burnt to ashes they make many and divine works and various colours (as from lead<sup>91</sup>, and as from litharge and sand reduced to ashes), and leading the nature back outside to the visible. On the one hand they are active bodies, on the other hand a power, according to another discourse, displaying activity. And such things as he is able to display to you from matters incinerated and reduced to ashes pertain to the man skilled in medicine. For such things as come<sup>92</sup> to rebirth, relate to an easily apprehended art, especially they who cook together the ash of common plants with the like, and melt together the ashes of bodies and glasses with the like. So that there is no need to be afraid of burning and reducing to ashes all these bodies. For they come<sup>93</sup> again to a certain power and virtue and re-birth, having a nature imitative of the whole universe and of the elements themselves, whence also they have re-birth, a communion with a certain spirit, as of things coming into existence by a material spirit. So copper, like a man, has both soul and spirit. For these melted and metallic bodies when they are reduced to ashes, being joined to the fire, are again made spirits, the fire giving freely to them its spirit. For as they manifestly take it from the air that makes all things, just as it also makes men and all things, thence is given them a vital spirit and a soul. So also the fusible bodies, being reduced to ashes with the metallic bodies, by a certain method recover their soul, as if becoming akin to the fire. And likewise all the elements have creations, destructions, changes and restorations from one to another. So also copper, being burnt and restored with oil of roses<sup>94</sup> and being expelled, after it has undergone this many times, becomes without stain, better than gold. But it is necessary to allow of this being threefold, for the un-tinged, the being-tinged and the tinged. For by the tincture it is restored, whether divinely or by way of healing. And on the question of that which is being tinged, understand this to be the restoration,

βαπτομένου δὲ τοῦτο νόει τὴν ἀνάκαμψιν, ὡς ὅταν ἀπὸ σποδοῦ καὶ τέφρας ἐπὶ ἐνέργειαν βαφικὴν<sup>12</sup> ἐρχόμενος τὴν ἐν δυνάμει καὶ τῆς δι' ἐνεργείας. εἰσὶ γάρ τινα τῶν πασχόντων ἀνακάμπτεσθαι. τοῦτο δὲ εἶπεν ὅτι ζ' τῆς ἀληθοῦς συντέχνης καίεται καὶ πυρὶ φευκτόν ἐστιν, ἀλλὰ πάσχει ἀπὸ τοῦ πυρὸς καὶ αὐτὸ ἀν διαβὰς οὐ συγχέεται καὶ αἱ ὀπτήσεις τῶν κατ' Ἄιγυπτον ἐπιβολῶν οἷς κέχρηται καὶ οὐ συγχέεται τὸ φάρμακον τῇ βαφῇ. ὡσπερ γὰρ εἶπεν ὁ κριτικὸς διδάσκαλος καὶ φιλόσοφος καὶ καθηγητῆς, ὅτι ὡσπερ σφενδόνη παρερχομένη ἀκοῦσαι μὲν τινα, οἴχεται δὲ πετομένη τοῦ βάλλοντος ἰσχύει, οὕτως οὖν οἴχεται τοῦ ἀντιτιθέντος τὸ τραῦμα, ἀλλ' ὁ ἔχων ἔχει ὁ ποῖος, καὶ ἀληθῶς οἴχεται· οὕτω καὶ ἡ σποδὸς αὕτη ἔδραμεν καὶ βίπτει ἀνεξαλείπτως καὶ ἀνεξάλειπτον ποιεῖ τῆς βαφῆς τὸ αἷτιον ἢ τὸ φάρμακον εἰς τὸ συγγενὲς πῦρ καὶ ἀέρα ἀναλύεται, ὡς ἐν κόλποις γοιέων φεῦγον καὶ ἀτοκαίόμενον. εἶτα ἔχομεν ὑμῖν ἐτέρους μεγάλους ἧ συγγράψιν<sup>13</sup> πολλὰ καὶ πλείονα. οὗτος ὁ χαλκὸς ρ ὁ πάντα πάσχων τὸ πλεόν παροπτούμενος γίνεται λίθος ἐτήσιος τῷ χρώματι ὡς τι σφίγγον ἐτήσιος. μετὰ οὖν τὸ ὀπτηθῆναι ἀποσβέννυται τῷ θεῖῳ ὑγρῷ, ὃ καλοῦσιν ὕδωρ θεῖον τὸ ἀπολυόμενον ἔλαιον, καὶ γίνεται οἶνος<sup>14</sup> πάχος καὶ μείνας ἐκεῖ μάλιστα<sup>15</sup> ἡμέραν θέρμην πραότητα ἀδιαπνεύστου ὀργάνου, ἢ ὕλη φθαρεῖσα λοιπὸν τὸ ἐμφανὲς μυστήριον τοῦ ὕδατος τοῦ θεοῦ τὸ ἄθικτον τὸ ζητούμενον ἀποτελεῖ. καὶ αὐτὸ ἐστὶν ὁ λίθος, ὃ ταῦτα ποιῶν. ὡσπερ γὰρ ἡμεῖς τὰς τέσσαρας δυνάμεις, τουτέστι ἐσεκτικὴ<sup>16</sup>, δεκτικὴ, τονοτικὴ, ἀλλοιωτικὴ, τότε ποιοῦμεν τὸ ὕδωρ τοῦ θεοῦ τὸ ἄθικτόν. τὸ πανβύβιον αἶμα ὡς δι' ὄργανον διὰ τὸ τοῦ ἥπατος ὑποκείμενον τῇ γαστρὶ, καὶ τὸ σῶμα σχοῦν καὶ θάλλον αὐτῷ καὶ καίον καὶ τὰ πάντα τὰ δύο θεῖα. τὸ γῦλα ξανθὸν δὲ ἐν ἥπατι ἐξαιματοῦμενον πλεόν ἰποζόντων<sup>17</sup> τῶν φυτῶν. καὶ τοῦτο πάλιν τὸ εἰλικρινὲς ἔργον νεφροῖς<sup>18</sup> ἐξαφριζόμενον ποιεῖ τὴν σποράν καὶ παλιγγενεσίαν. ὡς καὶ ἡ τέχνη μετὰ τὴν τῶν λευκῶν καὶ τῶν ξανθῶν ποιεῖ τὴν σύνθεσιν ἐπὶ ὀλίγων βολβήτων τουτέστι τὰς τῆς τέχνης ἐξαφρίσεις καὶ παλιγγενεσίας σπορά, ἵνα μετ' ὀλίγον χρόνον ἀποτεχῆ<sup>19</sup> ζητούμενον, σχήματι<sup>20</sup> καὶ χρώματι καὶ μεγέθει. καὶ ὧδε μὲν ἡ τέχνη ἔχει. ἐμεῖ<sup>21</sup> δὲ διὰ τῶν στοιχείων. εἰ καὶ δι' αὐτῶν τὸ ζητούμενον τοῦ θήλειος καὶ τοῦ ἄρρενος ὁμοῦ ἐκθοροῦνται καὶ πλεοῦται τὸ γενόμενον. παρατήρει οὖν καὶ ἐν τῇ τέχνῃ τὸ πῦρ καὶ τὸ ἐκθόρημα τοῦ πνεύματος οὐκ ἀναμένοντος. ἐνθα καὶ τὰ πταίσματα γίνονται προερεθισμοί, τὴν ψυχρότητα τὴν θήλειαν, τὴν δυσκίνητον, τὴν ἐκτρωμανῆ. ὧ δὲ καὶ καπρῶδη καὶ ἄθικτον καὶ ἀνδροκαθίστρια μήτρα, παντὶ ἐπιθυμουμένη ὁπόταν τάχειον ποιήσῃ, ὃ ἐστὶν χαρὰς καὶ ἔρωτος ἀφροδισιακὸν σύμβολον ὃ ἐστὶν καχασμός. τοῦτο καὶ οἱ χρυσοχοοὶ εἰδότες ὃ λέγουσιν, τοῦτό φασιν ἐγέλασαν, καὶ τότε χρῶνται τῶν κατ' Ἄιγύπτου ἐπιβολῶν, ἅτινα ἐκφαυλιζόμενα αὐτὸς ὁ λίθος ὁ ἐτήσιος οἰκονομούμενος ποιεῖ ὅσα καὶ ἡμεῖς, καὶ μὴ θαυμάσης, εἰ ἐκ πολλῶν λίθων καὶ ἐτέρων

<sup>12</sup> M.—βαφικὴν.

<sup>13</sup> M.—συγγράψω.

<sup>14</sup> M.—οἶνου.

<sup>15</sup> M.—μῦ.

<sup>16</sup> M.—ὄρεκτικη.

<sup>17</sup> M.—ἀπὸ ζόντων.

<sup>18</sup> M.—ἐν νεφροῖς.

<sup>19</sup> M.—ἀποτεχθῆ.

<sup>20</sup> M.—σχηματι.

<sup>21</sup> M.—ἐκεῖ.

as it is that which comes from the cinder and ash for the tinctural virtue which is in potency and through its actuality<sup>95</sup>. For there are certain of the things that suffer restoration. For he says this, that the rainwater<sup>96</sup> (?) of the true art is burned and is fugitive in fire, but suffers from the fire and, crossing over, it is not melted. And <in> the roasting of the projections according to the Egyptian, which he uses, the drug is not melted in the tincture. So has said the critical teacher and philosopher and guide; just as a sling passing by someone may wound him<sup>97</sup> (that which is thrown is gone as a result of the strength of the thrower), so then is gone the wound of the man standing in the way. But he who has it, has it whoever he is, if indeed it truly is gone. So also the ash itself runs and tinges indelibly and makes indelible the cause of the tincture, or the drug is dissolved into its kindred fire and air, as being fugitive and burnt up in the bellies of its parents.

Then we have for you other great discourses<sup>98</sup> (?); I will write many things and more. This copper, suffering all things and being further roasted, becomes the etesian<sup>99</sup> stone in colour, etesian as something binding<sup>100</sup>. After being roasted it is quenched in the divine moisture, which they call the divine water, the dissolved oil, and it becomes the thickness of wine, and there remaining for forty-one days<sup>101</sup> in the gentle heat of a vapour-tight vessel, the matter being destroyed completes at length the apparent mystery, holy and sought-for, of the water of sulphur. And it is the stone which does these things. For just as we <make> the four powers, namely, the appetitive<sup>102</sup>, retentive, strengthening and alterative, then we make the virgin water of sulphur. The blood tinging all, as by an instrument, through the part of the liver lying beneath the stomach, both warming the body which has it and burning also the whole of the two sulphurs. For the yellow milk which is in the liver is changed into blood more than by the living plants. And again this pure work being despumated in the kidneys makes the seed and the re-birth. So also the art, according to the art of the white and the yellow, makes the synthesis from a little horse-dung, that is the despumation of the art, and the seed of re-birth, that after a little time you may construct<sup>103</sup> the thing sought for in form and colour and size. And thus is the work. For there <it is> by means of the elements, if also the thing sought by them is born of the female and the male likewise, and that which is generated is perfected.

For observe closely the fire in the art and the birth of the spirit which does not remain fixed. Then also mistakes become previous irritations<sup>104</sup>, the female coldness, the slow to move, the miscarriage. Wherefore also the womb, lustful and virgin and the place of the man<sup>105</sup>, all desirous whensoever it may be made quick<sup>106</sup>, it is this which is the aphrodisiac symbol of joy and love, which is laughter<sup>107</sup>. So also the melters of gold, understanding what they say, say this 'they laughed'<sup>108</sup>, and then they employ projections according to the method of the Egyptian, which matters, being corrupted, the etesian stone itself operates when well managed, as also do we. And do not wonder if

εἰδῶν εἰς ὧν λίθος γίνεται καὶ λέγεται. ἢ οὐχ ὁρᾶς τοὺς τὴν μούσαν ἀπεργαζομένους καὶ τὰ καλά, ἵνα καὶ τὰ ζῶδια καὶ τοὺς θηλοὺς<sup>22</sup>, καὶ τὰς βαφάς, ὅτι ἐκ πολλῶν εἰδῶν ἓνα λίθον ποιοῦσι. μάλιστα οἱ διὰ  $\Delta$  κρόνου καὶ χαλκίειδον γινόμενον, ὥστε καὶ γλυφῆς ἐπιδέεσθαι καὶ πάντα ὅσα ἂν οἱ λίθοι οἱ τοιοῦτοι οἱ χρήσιμοι, ἐκ πολλῶν λίθων ἓνα λίθον ποιοῦσιν. ὄντινα καλοῦσιν ἐτήσιον. διὰ τοῦτο τοῖς ἐτήσιος σκευάζεσθαι τὴν γραφὴν ὄπτοντες καὶ ἀποσβεννύοντες τὸ ἀπολελυμένον ὕδωρ, ὥσπερ ἐφιν, καὶ σήποντες ποιοῦσιν τὸ ὕδωρ τοῦτο τὸ θεῖον ἄθικτον τὸ ἀπὸ μόνου θεοῦ. οὗτός ἐστιν ὁ λίθος ὁ ἐτήσιος. σὺν τούτοις ἔχει πᾶσιν ὀνόμασιν. οὗτος ὁ πορφυρῶς<sup>23</sup>, ὁ ἐν τῷ πορφύρῳ μετάλλῳ εὐρισκόμενος, ὁ διακασσιτήρου πορφυροχρῶμος μακεδονικός, καὶ εἴ τι ἄλλο λέγεται ἢ γράφεται ἢ σημαίνεται ἐν ταῖς θείαις καὶ ἀλληγορικαῖς γραφαῖς ὡς' εἴ τι δ' ἂν σημαίνωσιν αἱ γραφαὶ περὶ πολλῶν ἀλληγοροῦσιν. οὗτός ἐστιν ὁ ἐτήσιος ὁ παρερμος<sup>24</sup> ὁ πολύχρῶμος, ὁ ἐν τῷ κλειδίῳ ἐκδοθεὶς πρὸς ἕκαστον χρῶμα οἰκονομούμενος, καὶ σὺν χαλκῷ ἀναδειχθεὶς καὶ ἐλαίῳ τοῦ φανοῦ ἀναλαμφθεὶς. οὗτος εὐτυχεῖς ἐποίησε τοὺς τῆς Ἀιγύπτου ἐπιμελητὰς καὶ τοὺς αὐτῶν προφήτας. καὶ ταῦτα μὲν περὶ τῶν ἀποτεφρωμένων καὶ σποδωμένων, καὶ ἀκαυστούμενον ποσούντων ἔργων. περὶ δὲ τοῖς ἔργοις ἐλαιώσεως (μάλιστα γὰρ αὕτη εἴωθεν ποιεῖν τὰ πάντα) σποδὸν ποιοῦσιν διαφόρως μετὰ τὸ λευκανθῆναι τὸ λευκὸν σύνθεμα. καὶ πρῶτον μὲν ἠλίφ καὶ δρόσῳ ἄλμη θαλάσσης, ἢ οὕρῳ ἢ ὀξύλμη ἡμέρας πολλὰς ἀναξηραίνοντες ἡλίου δυνάμει, καὶ ὀστράκων δαψιλέσι λειώσεσι. συνλειοῦσι τὴν ἰῶσιν ὑδραργύρῳ, ἵνα καταποθῆ ἀπὸ τοῦ ξηρίου, καὶ ἐλαιώσαντες ἐψοῦσιν τῷ ἠλίφ. ποτιοῦντες τῷ ὀργάνῳ ἐπὶ ἡμέρας<sup>25</sup> καὶ ἀναξηραίνοντες λειοῦσι πάλιν καὶ ὑγροῦσι. πάλιν ἀναξηραίνοντες λαμβάνουσιν ὀξύμελι καὶ ἐποπτοῦσιν ἐπὶ ἡμέρας τρεῖς. καὶ καρτεροῦσι ζῶντες καὶ φυλάσσουνσι καὶ λειοῦσι πάλιν καὶ ποιοῦσιν οἴνου ἢ ἐλαίου πάχος, καὶ σήπουσι πραστάτῳ<sup>26</sup> πυρὶ ἐπὶ ἡμέρας μέγιστα<sup>27</sup> καὶ λειοῦσι<sup>28</sup> καὶ λαβόντες τὸ ἀργυροζῶμιον καὶ τὸ θεῖον μετὰ τῶν δαφνῶν καὶ τῶν ἄλλων πάντων ὄπτοῦσι καὶ ἐπιβάλλουσι χαλκὸν ἐξιθύντα, ὑέλφ λαμπρῷ καὶ νίτρῳ καὶ μυσί.

<sup>22</sup> M.—ὑελούς.

<sup>23</sup> M.—πορφυρίτης.

<sup>24</sup> M.—παρ ερμη.

<sup>25</sup> M.—ἡμερα.

<sup>26</sup> M.—πραστατω.

<sup>27</sup> M.—μα.

<sup>28</sup> M.—καὶ λειοῦσι καὶ λειοῦσι.

from many stones and various species the stone, being one, is born and is so spoken of. Do you not see that those who cultivate the muse and things of beauty, as they make animals and glasses and dyes, make a single stone from many species? Especially do they make it from lead  $\eta$  and that which has become bronze-like, that they may not lack a carving. And as such useful stones make all such things, from many stones they make one stone, which they call the etesian stone. On account of this prepare the inscription<sup>109</sup> for the etesian stones; concocting and quenching the water released, as I said, and putrefying it, they make the water which is divine, virgin, from a single sulphur. This is the etesian stone. With these it is called by all names. It is the porphyry<sup>110</sup> which is found in the purple mineral, the purple-coloured substance made from tin<sup>111</sup>, the Macedonian <stone>, and if any other name has been spoken of or written or symbolised in the divine and allegorical writing, it is that; for if the writings would signify any thing, they allegorise about many things. This the etesian stone, the many-coloured according to Hermes<sup>112</sup>, which is given out in the *Little Key*<sup>113</sup> as being operated for every colour and as being displayed with copper and revived by oil of the phanos<sup>114</sup>. For he made fortunate those who had charge of Egypt and also their prophets. And these matters relate to the substances reduced to ashes and incinerated and to operations rendering the material incombustible. And concerning elæosis<sup>115</sup> for these works (for this especially is wont to perform all things) they make the ash in diverse fashion after the white composition has been whitened. And first of all with sun and dew<sup>116</sup>, with brine<sup>117</sup> of sea-water, or with urine<sup>118</sup> or sour-brine<sup>119</sup>, desiccating for many days by the power of the sun, and with ample triturations of potsherds, they triturate the iosis<sup>120</sup> with mercury, that it may be absorbed by the dry powder; and submitting it to elæosis, they heat it in the sun imbibing it in the instrument for a day, and, drying it, they triturate it again and moisten it. Again drying it, they take oxymel<sup>121</sup> and heat it for three days, and while they live they are steadfast and watch and triturate again, and make it the thickness of wine or oil and putrefy it with a very gentle fire for 41 days<sup>122</sup>, and triturate it [and triturate it] and taking the silver-liquid<sup>123</sup> and sulphur after the laurels<sup>124</sup> and all the other things, they heat them and project them on well-cleaned copper with shining glass<sup>125</sup> and natron and misy<sup>126</sup>.

## NOTES.

<sup>72</sup> The name Theodoros occurs in the Greek alchemical writings : (1) in the *Dedication* (Berth., *Coll.*, iii, 4) where are mentioned 'the famous thoughts of Theodoros who is rich in god-inspired ways' ; (2) in the title of the work *Headings of the book of Zosimos addressed to Theodoros*.

The Theodoros mentioned in the *Dedication* is probably not identical with the Theodoros to whom Stephanos addresses the letter, for it is probable that the *Dedication* was written at the same time as the alchemical poems, which quote Stephanos and probably date from the eighth century.

<sup>73</sup> The six metals ; this is confirmed by a gloss of Pizimenti.

<sup>74</sup> Κλαυδιανός. This word is not a proper name. It is mentioned eleven times in the alchemical corpus. Berthelot conjectures that it may be a copper-lead alloy containing perhaps also zinc. He supposes the name to be equivalent to *aes Claudianum* (cf. *aes Marianum*, *Livianum* etc.). An examination of the texts renders this doubtful. It is classified with minerals (chrysocolla, pyrites) rather than with metals.

<sup>75</sup> Λευκάργερος. Not in the lexicons, nor mentioned elsewhere in the alchemical corpus.

<sup>76</sup> The symbolism of the serpent or Dragon in Greek Alchemy is quite complex (v. Sherwood Taylor, *Ambix*, 1, 45-46). The specifying of the colour of the parts of the serpent is found also in two anonymous fragments of doubtful date (Berth., *Coll.*, iii, 21-3). The dragon seems here, as in later Alchemy, to be connected with the idea of putrefaction. A long passage in the late alchemical poem of Theophrastos on the Sacred Art develops the notion further (*Ideler*, ii, 332-3 : see also translation by C. A. Browne, *Scientific Monthly*, Sept. 1920, 204-5).

<sup>77</sup> Μαγιστριανός. An official position.

<sup>78</sup> Καβιδάριος. The word, which has elsewhere been translated as a proper name, Cabidarius, means 'lapidary' : it does not seem to occur before the fifth century. Nothing is known of Theodoros or Jakobos.

<sup>79</sup> 'Αιθάλη. The vapours were regarded as spirits capable of penetrating and colouring metals.

<sup>80</sup> Φανός. This word in non-alchemical texts denotes a torch, lamp or lantern. Olympiodoros (Berth., *Coll.*, ii, 75) uses the word as equivalent to a cup . . . 'a cup or phanos of glass lying on the top' . . . But in the *Apparatus and Furnaces* of Zosimos (*ibid.*, ii, 234) we find : 'But it is possible to fix mercury in the phanos and similar apparatus with, as it were, a serpent-shaped base'. It is difficult to picture the apparatus.

<sup>81</sup> Cf. Dioskurides, *Mat. Med.*, v, 110.

<sup>82</sup> Κώμυρις. This word (also Κόμαρι, Κόμυαρι, Κόμυρις) is used in three senses, first and usually as a purple dye-stuff, secondly as a white earthy substance classified with Chian Earth, talc, selenite, etc. Lastly, in the Syriac texts it represents a highly poisonous substance, perhaps white arsenic (Berthelot, *La Chimie au Moyen Âge*, ii, 26).

<sup>83</sup> Ideler gives ἐρύλου, 'entire', but M. and many other MSS. give ἐρύλου, 'material'. Piz. translates 'materiali'.

<sup>84</sup> Piz. : 'quæ plane planiores ducuntur'.

<sup>85</sup> Ideler prints this as Ω. It is, however, the sign for οὐρανός, heaven, and for the zodiacal sign Libra (ζυγός) ; v. *Catalogue des Manuscrits Alchimiques Grecs*, VIII, *Alchemistica Signa*, Zuretti, 1932, signs 1267, 1313, pp. 23-4.

<sup>86</sup> Τέφρι and σποδός seem both to be equivalent in the alchemical texts to 'ash' : σκωρία seems to be used chiefly of mineral-products.

<sup>87</sup> Apparently taken from Hermes' lost work, quoted by Zosimos (Berth., *Coll.*, ii, 189).

<sup>88</sup> ἄθικτος. A word much used in Greek Alchemy. In non-chemical texts it signifies *untouched, virgin, not-to-be-touched, sacred*. In alchemical texts it is used chiefly of sulphur. The alchemical lexicon gives it the meaning τὸ καθαρὸν καὶ ἀμόλυντον, *the pure and undefiled (or undefiling)*: ὕδωρ θείου ἀθικτου, water of virgin sulphur, was used by early alchemical authors for tinting metals.

<sup>89</sup> This phrase is in character with Hermes' lost treatise but is not quoted elsewhere.

<sup>90</sup> See Note 47 (*Ambix*, 2, 137). Presumably alkali from wood ash was used in making polysulphide or thio-arsenate solutions for tinting metals.

<sup>91</sup> Ideler has κρόκου (of saffron), but M. gives the sign of lead and also κρόνου (of Saturn).

<sup>92</sup> Reading of M. adopted.

<sup>93</sup> The power of ashes to regenerate the plant from which they were made is met with again in the sixteenth and seventeenth centuries under the title *palingenesis* (cf. Stephanos, *παλιγγενεσία*). The underlying idea is, to quote an anonymous work on *Curiosities of Art and Nature in Husbandry and Gardening* (1707), that 'the Ideas, the Shadows, the Phantoms of Bodies preserve themselves in the salts that are extracted from them'. Some seventeenth-century authors regarded the salts extracted from these ashes as no less than the substantial form of the plants. The earliest author to mention palingenesis appears to be Paracelsus. It is discussed by some twenty other authors and most miraculous experiments adduced. Boyle (*Works*, ed. Birch, 1744, i, 216, b) tried experiments on the freezing of lixivium of ashes, and concluded that palingenesis was illusory. It would be interesting to know whether Stephanos was the source of the notion of palingenesis.

<sup>94</sup> Not mentioned in the works of earlier alchemists. Oil of natron is used by Mary for a similar purpose. Hippocrates makes frequent mention of oil of roses. This is presumably olive-oil scented with roses, not a distilled product. Stills for producing oil of roses, *ῥοδοστάγμα*, are mentioned by late alchemical texts (*post* 1000 A.D.). Rose-water is mentioned under the latter name by the tenth-century authors Constantinus Porphyrogenetes and Theophanes Nonnus.

<sup>95</sup> Ἐνέργεια seems to be used both for 'virtue' or 'activity'—its usual alchemical sense—and also as a term of Aristotelean philosophy meaning 'existence in actuality' as opposed to *δύναμις*, 'existence in potency'.

<sup>96</sup> ☽. This sign does not correspond exactly to any recorded, but may be that for rain-water, ὕδωρ ἑερῶν (Zuretti, *op. cit.*, p. 18, sign 959), Piz. translates 'tutia'. The word is evidently neuter, so is unlikely to be the latter.

<sup>97</sup> Piz.: 'præter labens aliquem vulneraret', ἀκουῶσαι perhaps being taken for a part of ἀκουτίζω.

<sup>98</sup> Piz. translates the sign as 'sermones' . . . . 'deinceps alios vobis sermones comparavi, in quibus multo plura conscribam'. The word omitted may be λόγους.

<sup>99</sup> Λίθος ἐτησίος seems to have been equivalent to some pyritic substance. It seems that cuprous oxide (*aes ustum*) may be intended above, which is of a similar colour to the reddish-purple iron oxide from burnt pyrites.

<sup>100</sup> Piz.: 'ut quidam coruscans æthesius'.

<sup>101</sup> Ideler has μάλιστα; M. has μᾶ, 41. Piz. has 'per quadraginta dies' (see also note 133).

<sup>102</sup> Following M.

<sup>103</sup> Ἀποτεχνῆ in Id.; Ἀποτεχνῆ in M. The word is not in the lexicons consulted.

<sup>104</sup> Προερεθισμός. The word is used by Galen (ed. Kuhn, Leipzig, xv, 622) in the sense of some condition, antecedent to a disease, which might weaken the bodily powers.

<sup>106</sup> Ἀνδροκαθίστρια. The word is not given in the lexicons. Ducange's *Glossarium Græcitatibus* cites only this source. Piz. translates 'in quo masculus cubat'. The word might mean 'seat of the male' from ἀνὴρ and καθιστήριον or some such word.

<sup>106</sup> Τάχειον. The meaning is doubtful. The word does not seem to bear the meaning 'quick' = pregnant.

<sup>107</sup> Piz. refers in a gloss to 'Lullus in codicillo 149 in cap. Quid sit materia lapidis.' The passage intended appears to be that given in Chapter L of the *Codicillum* as printed by Manget, *Bibliotheca Chymica Curiosa*, i, 897.

<sup>108</sup> This curious passage seems designed to explain a phrase in the short recipe entitled the *Diplosis of Eugenios* (Berth., *Coll.*, ii, 39, 9). The recipe specifies 'Burnt copper three parts. Gold one part. Melt and throw in arsenic. Calcine and you will find it brittle. Then triturate with vinegar for six days in the sun. Then after drying it, melt silver καὶ γελίαν. . .', which last phrase may be translated 'and it laughed'. This phrase is presumably an ancient copyist's error, to explain which Stephanos has used his ingenuity.

<sup>109</sup> Γραφίην, so also M. Piz. evidently reads βαφίην, for he translates 'tincturam'.

<sup>110</sup> Not mentioned elsewhere in alchemical texts.

<sup>111</sup> It is hard to resist the suggestion that this is the earliest reference to purple of Cassius.

<sup>112</sup> Id. has παρερμος, which does not appear in the dictionaries. M. has πυρ ερμη. Piz. translates 'apud Hermetem', which the next line confirms.

<sup>113</sup> The *Kleidion* or *Little Key* of Hermes is lost. It is mentioned in the compilation of Christianus Philosophus (Berth., *Coll.*, ii, 281, 18-19) and evidently dealt with these purple stones which are in one place identified with ἰόγαλκος, and therefore may be cuprous oxide.

<sup>114</sup> Piz. translates 'raphani'. Oil of radish, ἔλαιον ῥαφάνινον, is often mentioned in the texts.

<sup>115</sup> Ἐλαιώσεως. Only found in alchemical texts. Zosimos in his *Chapter-headings of the Work addressed to Theodore* (Berth., *Coll.*, ii, p. 215, 1) says: 'Concerning the etesian stone. . . . For by means of the treatment it shows another colour, one from the kerotakis and one from the elæosis'. So little is known of the process that the transliteration *elæosis* is perhaps better than the translation *ceratio* given by Piz.

<sup>116</sup> Exposure to dew and sun was practised in the recipes of the Papyrus Holmiensis and in recipes of Demokritos (Berth., *Coll.*, ii, 45, 22, v; also 155, 6, 10) and Zosimos (*ibid.*, 113, 18).

<sup>117</sup> Ἄλμη. Brine is used only in the Demokritan recipes or in passages deriving therefrom. Its use is for treating various mineral substances (Berth., *Coll.*, ii, 45, 2; 45, 14; 45, 21; 20, 17; 51, 12; 52, 9; 54, 17, etc.).

<sup>118</sup> Οὔρον. Urine is used extensively in recipes of the chemical papyri and in recipes of the Demokritan type. Its use is as a corrosive and detergent liquid similar to brine (Berth., *Coll.*, ii, pp. 44-55, 288-312 *passim*).

<sup>119</sup> Ὁξάλμη. A mixture of brine and vinegar. Mentioned as *materia medica* by Dioskurides (*Mat. Med.*, v, 33) and much used as a corrosive material in the Demokritan recipes (Berth., *Coll.*, ii, 44, 15; 45.12-14; 288, 24; 394, 4; 395, 24; 308, 28, etc.). It is mentioned in the Papyrus of Leyden (Recipe 48).

<sup>120</sup> Perhaps here used for a mixture designed to bring about coloration (Sherwood Taylor, *Ambix*, 2, p. 138, note <sup>53</sup>).

<sup>121</sup> Ὁξυμέλι was a mixture of vinegar and honey often used as a medicament (Dioskurides, *Mat. Med.*, v, 22). Demokritos employs it as a corrosive in the treatment of pyrites (Berth., *Coll.*, ii, 44, 16).

<sup>122</sup> Ideler has *μεγιστη* M. has *μᾱ*, 41. Piz. translates 'per quadraginta dies' (see note <sup>110</sup>).

<sup>123</sup> *Ἀργυροζώμιον* is mentioned in two passages (Berth., *Coll.*, ii, 19, 14; 214, 5). The first speaks of the '*argyrozomion* which is of citrons'; the second is very obscure but seems to indicate the meaning given here.

<sup>124</sup> *Δαφνῶν*, Laurels. Possibly a cover-name for arsenic trioxide, mercury or 'white sulphur'. The only phrase which can explain this curious symbolism, which finds parallels in several early texts, is an '*Oracle of Apollo*' (Berth., *Coll.*, ii, 276, 4-5), where, apropos of the distillation or sublimation of mercury, it is said, that 'Like a virgin laurel it raises itself on to the lids of cauldrons'.

<sup>125</sup> The use of glass in a projection is not found elsewhere in alchemical texts.

<sup>126</sup> *Μίση*. Misy is mentioned by Dioskurides and by Pliny (*Hist. Nat.*, xxxiv, 31). It is evidently a mixture of basic iron and copper sulphates resulting from the natural oxidation of pyrites. It is used in a great number of recipes of the Demokritan type and also in the recipes of the Chemical Papyri. It was apparently used:

- (a) for the surface removal of copper from base gold (*Papyrus of Leyden*, 15, 17, 25, 51, 69, 76, 88);
- (b) in the arsenical mixtures used for whitening copper (Berth., *Coll.*, ii, 46, 20; 53, 2; 138, 2; 223, 14; 286, 8; 288, 12);
- (c) in the surface cleaning or coloration of metals (*ibid.*, 46, 2; 166, 17);
- (d) in yellow varnishes destined for the surface coloration of metals (*ibid.*, 56, 2; 310, 25);
- (e) in the so-called 'yellow sulphur' (*ibid.*, 45, 2; 166, 17);
- (f) as a mordant in dyeing (*Papyrus Holmiensis*, ιζ, 1; κδ, 12, 35; ιη, 12).