ANONYMOUS ON ALCHEMY, ARISTOTLE, AND CREATION: AN UNEDITED THIRTEENTH-CENTURY TEXT

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Around the year 1200 there appeared a Latin translation of Pseudo-Aristotle's *De mineralibus*, in which the author denied the possibility of the transmutation of metals.[1] This statement, especially when placed in the mouth of the revered Aristotle, was a severe blow to the aim of the alchemists. Indeed it had been Aristotle's theory of the generation of metals in his *Meteorologica* and his theory of a common origin of all metals that had encouraged the alchemists in their efforts to transmute base metals into gold.[2] This pseudo-Aristotelian challenge to the truth of alchemy seems to have elicited at least one previously unrecognized response. In a short treatise, tucked away in a sixteenth-century manuscript of alchemical miscellany, an anonymous author quotes "Aristotle" saying that the species of metals cannot be transformed or transmuted, but includes the proviso, also taken from Aristotle: unless they be reduced to their primary matter.[3] This *materia prima* is identified by our author as the moistness that comes from water, water whose creative power our author grounds in Holy Scripture,

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[1] See William Newman, "Technology and Alchemical Debate in the Late Middle Ages," *Isis* 80 (1989): 427, "Our story begins with the English translator Alfred of Sareshel, who around 1200 translated a meteorological section of the Persian philosopher Avicenna's (980–1037) *Kitāb al-Shifā'* (*The Book of Remedy*) and inserted it into the fourth book of Aristotle's *Meteorologica*, already translated by Henricus Aristippus. This short text, which came to be known in Latin as *De congelatione et conglutinatione lapidum*, immediately acquired the authority of a genuine Aristotelian production, since it appeared to be the conclusion of the *Meteorologica*'s fourth book. It became thereby the *locus classicus* for all subsequent attacks on alchemy, and virtually any alchemical writer — whether philosophically sophisticated or not — felt obliged to respond to the arguments of 'Aristotle' (i.e., Avicenna)." See Charles B. Schmitt and Dilwyn Knox, *Pseudo-Aristoteles Latinus: A Guide to Latin Works Falsely Attributed to Aristotle before 1500* (London, 1985), 43–44, §59 *De mineralibus*.

[2] Newman ("Technology," 425) writes, "In fact, the alchemy of the late Middle Ages was a perfectly reasonable and sober offshoot of Aristotle's theory of matter." See also John Read, *Prelude to Chemistry: An Outline of Alchemy*, 2nd ed. (orig. publ. 1939; repr. Cambridge, MA, 1966), 9–19, 120; and D. E. Eichholz, "Aristotle's Theory of the Formation of Metals and Minerals," *Classical Quarterly* 43 (1949): 141–46.

[3] This proviso, "unless they be reduced to their primary matter," was included in Alfred of Sareshel's Latin text, but not in the original Arabic, according to the edition of E. J. Holmyard and D. C. Mandeville, *Avicennae De congelatione et conglutinatione lapidum* (Paris, 1927), 42 and n. 6.

especially in the hexaemeral tradition of the story of creation from the book of Genesis.

The text may be found in MS Clm 26059, now in the Bayerische Staatsbibliothek, Munich. The treatise was overlooked by the cataloguers, who listed excerpts from the third book of Marsilio Ficino's *De vita* as extending from fols. 277 to 289.[4] While preparing a critical edition of Ficino's text, I discovered that the Ficino selections actually concluded on fol. 284v, immediately followed by the new treatise on fol. 284v, with the words, "Cum multi sint in desperatione," and ending with "benedictus amen" on fol. 289v.[5] The only intimation that a new text has begun is the rubricated initial C. There is no *explicit* to mark the end of the Ficino excerpts, nor is there a rubricated title for the new work. This is not, strictly speaking, an unusual way for this manuscript to introduce a new section, since seven other sections do begin in this fashion, although four of these seven follow a formal *explicit*. Six of the more than forty pieces in this manuscript, indeed, begin with no title or rubricated capital at all.

The manuscript, Clm 26059, paper, 104x143mm, 1507–8, fols. I–V and 320, is, as I have said, a miscellany of traditional alchemical materials from such well-known medieval writers as Raymund Lull and Geber, together with a number of lesser-known works, many of which survive only here.[6] A number of different scribes were at work on the manuscript, dividing the work into three parts (fols. 1r–24v and 29r–102v; 109r–164r; 165r–274v and 277r–296v). The primary script is a Gothic hybrid script of low quality.[7] A secondary cursive script was used by several hands to insert further selections into the main body of the text (fols. I–Vr, 25r–28v, 102v–108v, 275r, 297r–320v). The new treatise under discussion is sandwiched between the excerpts from Ficino's *De vita*, using a text based on one of the recently printed editions from the late fifteenth or early sixteenth century, and an anonymous text, the *Luna plena*, also extant only in this manuscript. The placement of our text among such neighbors suggests that it

[4] Karl Halm and Wilhelm Meyer, *Catalogus Codicum Latinorum Bibliothecae Regiae Monacensis*, Tom. 2, Pars 4 (Munich, 1871), 171–72.

[5] John R. Clark, "Marsilio Ficino among the Alchemists," *Classical Bulletin* 59 (1983): 50–54.

[6] Dorothea Waley Singer, *Catalogue of Latin and Vernacular Alchemical Manuscripts in Great Britain and Ireland dating from before the XVIIth Century*, 3 vols. (Brussels, 1928–31), and Lynn Thorndike and Pearl Kibre, *A Catalogue of Incipits of Medieval Scientific Writings in Latin*, rev. ed. (Cambridge, MA, 1963), list over a dozen texts extant only in this manuscript. Neither Singer nor Thorndike and Kibre cite the *Cum multi sint*.

[7] See Michelle Brown, *A Guide to Western Historical Scripts from Antiquity to 1600* (Toronto, 1990), 102, for what she terms *hybrida cursiva*, but our text has some bâtarde characteristics; see S. Harrison Thomson, *Latin Bookhands of the Later Middle Ages 1100–1500* (Cambridge, 1969), pl. 82.

too will have an alchemical orientation. There is little else, however, that the manuscript can tell us about the text, except perhaps that the work was not written after 1507 when the manuscript is dated (fol. 296v). The work is extant only in this manuscript, as far as I have been able to ascertain, and its authorship and date are unknown, although internal evidence will not permit a date earlier than the thirteenth century.[8] I have transcribed the text and give a preliminary edition below, following a brief sketch of the plan of the entire work.[9]

The argument of the *Cum multi sint* is an abbreviated first person narrative, divided into three parts: lines 1–25 on the role of the Trinity in creation; lines 26–86 using the alchemical doctrine of the unity of the macrocosm and the microcosm to highlight the dominant role of water especially in the upper, but also in the lower world; lines 87–166 identifying water as the *materia prima* necessary for all generation: animal, vegetable, and mineral. Although the anonymous author begins his work speaking of the generation of metals and the multiplication of species, the purpose of the opening section, citing Genesis and the beginning of John's Gospel, is to ground his argument on the proper ordering of creation: Father, Son, and Holy Spirit, one Trinity. In the beginning God created heaven and earth. This beginning, the Latin word *principium*, is said to be identical to God the Son (6), thus establishing the nexus of the first two persons in the Trinity.[10] It was through the Son that God created all things, as can be seen in John's Gospel.[11] The third person of the Trinity, necessary for creation, the Holy Spi-

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[8] Our author cites certain texts (Pseudo-Aristotle, *De mineralibus*, and the Hermetic *Emerald Tablet*, for example), which are datable to, or not readily available until, the thirteenth century. See n. 1 above or n. 14 below.

[9] The edited text follows the orthography and sense pauses of the scribe; the punctuation has been modernized. Only a few emendations needed to be made and they are listed in the apparatus.

[10] This interpretation of the word *principium* seems to derive from the Aristotelian concept of principle, the Greek word *arché*. See Aristotle, *Metaphysics* 983a, 1012b–1013a, and passim; also his *Generation of Animals*, passim. See N. Häring, "The Creation and Creator of the World according to Thierry of Chartres and Clarenbaldus of Arras," in *Archives d'histoire doctrinale et littéraire du moyen âge* 22 (1955): 151 n. 1, "At least as early as St. Ambrose, the Latin exegetes of the verse speculated on the various meanings of the phrase *In the beginning*. See Ambrose, *Hexaemeron* I, 4, 12–16; P.L., 14, 139A, John Scotus, *De Div. naturae* III, 18; P.L., 122, 679C."

[11] See *Aquinas on Creation*, trans. Steven E. Baldner and William E. Carroll (Toronto, 1997), 2: "Thus, for example, Christians read the opening of Genesis in the light of the opening of the Gospel of John: identifying 'in the beginning' with 'in/through Christ.'" Baldner and Carroll are citing Joseph Ratzinger, *"In the Beginning . . .": A Catholic Understanding of the Story of Creation and the Fall*, trans. Boniface Ramsey (Grand Rapids, MI, 1995), 9–10.

rit, is identified in Genesis 1:2, "et Spiritus domini ferebatur super aquas" ("and the spirit of God moved over the waters").[12] For the genesis of this Trinity, our author is careful to proclaim his western faith at lines 17–18: "et in fide nostra credenda est trinitas ab utroque procedens," and again at line 22: "spiritus sanctus procedat ab utroque." Such statements of faith (that the Holy Spirit must proceed from the Father and the Son) may help to date our text to the thirteenth, or possibly the fifteenth, century, when the Eastern Church was again being pressured to accept this orthodoxy.[13] No real proof is presented to enforce this argument here, nor is any attempt made immediately to identify the operative agency of the Holy Spirit in creation. Indeed, the matter is thought worthy of a second treatise (24–25).

The author turns now to what he calls his main argument ("ad propositum nostrum descendamus," 25). He prefaces this section, however, with a quotation from that bible of alchemy, the hermetic *Emerald Tablet*. The *Emerald Tablet* is a series of thirteen oracular precepts ascribed to the legendary Hermes Trismegistus, which appear to offer one of the oldest statements of fundamental alchemical doctrine.[14] The citation that opens the second section of our text, where Hermes is referred to as the chief and father of philosophers, is taken from the first two precepts of the *Emerald Tablet*: "It is true, that is, certain, without falsehood, certain and most true. What is above is [like] that which is below, and conversely [what is below is like that which is above]."[15] The alchemical doctrine of the fundamental unity of all things, as expressed in these two hermetic precepts, allows our author

[12] In this paper, translations of the Bible, unless otherwise identified, will be taken from the Douay-Rheims version.

[13] It remains a matter of controversy between the Eastern and Western Church whether, for an understanding of the Trinity, the Holy Spirit is thought to proceed from the Father or from the Father and the Son (*filioque*). The word *filioque* was added to the Nicene Creed by the late sixth century; not however in the Eastern Church. See *Spirit of God, Spirit of Christ: Ecumenical Reflections on the Filioque Controversy*, ed. Lukas Vischer (Geneva, 1981), esp. p. 6, "Attempts were made at the Councils of Lyons (1274) and Florence (1439) to impose the *filioque* on the East; especially in the thirteenth century because of the *anathema* which Lyons laid on those who rejected the clause." See also Berard Marthaler, *The Creed: The Apostolic Faith in Contemporary Theology*, rev. ed. (Mystic, CT, 1993), 247–58.

[14] See Julius Ruska, *Tabula Smaragdina: Ein Beitrag zur Geschichte der hermetischen Literatur* (Heidelberg, 1926). The earliest Latin text of the *Emerald Tablet* is dated to the twelfth century, and the Tablet was known in the thirteenth century to Albertus Magnus; see F. Sherwood Taylor, *The Alchemists: Founders of Modern Chemistry* (New York, 1949), 88–90; and Read, *Prelude to Alchemy* (n. 2 above), 51–55.

[15] See *Tabula Smaragdina*, ed. Ruska, 2: "1. Verum, sine mendacio, certum et verissimum. 2. Quod est inferius, est sicut (id) quod est superius, et quod est superius, est sicut (id) quod est inferius, ad perpetranda miracula rei unius." Our author's striking omission, in

to move freely between the upper world of the triune God and his creation and the lower world with its four elemental qualities of hot, cold, wet, and dry. The Holy Spirit does indeed proceed from the Father and the Son above, just as moistness proceeds from hot and cold; and just as Father, Son, and Holy Spirit above make one God, so body, soul, and spirit below form one compound.[16] Just as from the creative trinity above there follows a fourth thing, namely creation, so from water, which contains the three primary qualities of hot, cold, and wet, there follows a fourth quality of dryness, from which earth is formed. Clearly our author has based his argument on Aristotelian natural philosophy, according to which the elements are interconvertible by varying the proportions of their primary qualities.[17] Water and earth then are the two elements identified here as responsible for creation both below and above. Proof seems based on a literal reading of Genesis 1:1 and 2, wherein earth and water are the only two elements mentioned.[18] Fire and air are noteworthy by their omission (42–43, "non loquendo de igne et aere," cf. earlier at 10–11, "non loquendo de aliis elementis," and again later at 79, "non loquatur de igne et aere"). Prominence is naturally given to water, since when earth was created, it was simply part of a confused mass (41 and again at 53).

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addition to the five-word conclusion, is the comparative word *sicut* in linking the world below to that above.

[16] As understood in the argument here, the author is drawing upon the alchemical doctrine whereby the world of the macrocosm is mirrored in the world of the microcosm. Later, in the Paracelsian tradition of the sixteenth century, "an analogy was drawn between mercury, sulphur, and salt composing the nature of metals and (respectively) spirit, soul and body composing the nature of man." Gareth Roberts, *The Mirror of Alchemy: Alchemical Ideas and Images in Manuscripts and Books from Antiquity to the Seventeenth Century* (Toronto, 1994), 51.

[17] See William R. Newman, *Promethean Ambitions: Alchemy and the Quest to Perfect Nature* (Chicago, 2004), 21: "Aristotle argued that these 'primary qualities' [hot, cold, wet, and dry] existed within the four elements and provided the means by which they could be transformed into one another. . . . The operation of the elements and the four qualities occupies many of Aristotle's physical works, such as *De generatione et corruptione*, *De Caelo*, and the *Physics* itself." See also Bruce T. Moran, *Distilling Knowledge: Alchemy, Chemistry, and the Scientific Revolution* (Cambridge, MA, 2005), 25–26; and Allison Coudert, *Alchemy: The Philosopher's Stone* (Boulder, CO, 1980), 18–19.

[18] On the other hand, Clarenbaldus of Arras, a student of Thierry of Chartres, interprets the "caelum et terram" to refer to all four elements: heaven = fire and air; earth = earth and water. See *Tractatulus (Liber de Eodem Secundus)* §36, ed. N. Häring, "The Creation and Creator of the World according to Thierry of Chartres and Clarenbaldus of Arras," in *Archives d'histoire doctrinale et littéraire du moyen âge* 22 (1955): 137–216, esp. 175; text on 200–216, esp. 212, "*caelum et terram creavit*, scilicet quattuor elementa. Nomine enim 'caeli' duo superiora elementa quae sibi cohaerent, ignis scilicet et aer, nomine vero 'terrae' quae sibi quoque cohaerent ad invicem, terra scilicet et aqua, designantur."

In the first section of this treatise, the author had cited the beginning of John's Gospel (1:3) in support of the role of the Son in creation (cf. 7–8). Now, immediately following upon his remarks regarding the dominant role of the element of water in creation, our author cites the rest of John 1:3, "what was made in Him" (43, "quod factum est in ipso"), combined with the next verse, 1:4, "was life and the life was the light of men" (44, "vita erat et vita erat lux hominum").[19] The *in ipso*, identical to *in principio*, "in whom all things were created," means that there is light and life in the things created. Since our author had earlier established the oneness of God, it may also be said that the Holy Spirit, moving over the waters, is this light and life (47–48).

"The Spirit of God moved over the waters" leads our author to declare his belief in the existence of waters above heaven and earth (48–49). This had been an open question in the twelfth century, when William of Conches declared it a scientific impossibility, while Bernardus Silvestris and Thierry of Chartres, among others, argued for the existence of water above the firmament.[20] When God created heaven and earth, that is, the firmament and what is above the firmament, he divided this confused mass into the four primary qualities (50–54). It was in the qualities of hot and moist that the life and the light were contained; firmness and darkness in the cold and dry (54–55). When God separated the light from the darkness, it should be understood to signify that out of that mass he was dividing the good from the bad angels (55–57).[21]

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[19] If this phraseology seems a bit strange to us, it would not have been for our author. The modern reading of John 1:4 is "In him was life and the life was the light of men," with the preceding verse, 1:3, being "All things were made by him and without him was made nothing that was made." The phrase "that was made" (*quod factum est*), which we think of as the end of verse 3, was actually taken as the beginning of verse 4 in the Vulgate text until ca. 1532, reading "what was made in him was life and the life was the light of men." See I. de la Potterie, "De interpunctione et interpretatione versuum Joh. 1:3–4," *Verbum Domini* 33 (1955): 193–208, esp. 200–208.

[20] See Peter Dronke, "Thierry of Chartres," chap. 3 in *A History of Twelfth-Century Western Philosophy*, ed. idem (Cambridge, 1992), 377, citing William and Thierry; also Winthrop Wetherbee, *Platonism and Poetry in the Twelfth Century: The Literary Influence of the School of Chartres* (Princeton, 1972), 111, citing Bernardus and Guillaume de Conches. Guillaume de Conches (William of Conches), *De philosophia mundi* 2.3 (PL 172:58B); Thierry of Chartres, *Tractatus de sex dierum operibus* 8–9; Bernardus Silvestris, *Commentary on Martianus Capella*, ed. E. Jeauneau, "N. sur l'Ecole de Chartres," repr. in E. Jeauneau, *Lectio Philosophorum* (Amsterdam, 1973), 44–45. Jeauneau, on 31–33, cites other patristic and medieval authors who took positions on this matter both pro and con.

[21] For this standard interpretation, see Augustine, *De civitate Dei* 11.19; Pseudo-Augustine, *Dialogus quaestionum LXV*, qu. 24 (PL 40:741); Aquinas, *Quaestiones Disputatae: De potentia* q. 4, art. 1 (*Opera Omnia*, vol. 13 [Paris, 1875], 125); Petrus Comestor, *Historia Scholastica: Genesis*, chap. 3 (PL 198:1057); and Gervase of Tilbury, *Otia Imperialia: Rec-*

Our author has thus far been keeping his focus clearly on the creation within the upper world. With the formation of the firmament in the midst of the waters and the subsequent division of the waters above from those below (58–59), emphasis begins to fall somewhat upon the lower waters, which were given the important generative function of causing the earth to bud (60–61, and cf. 74–76). Our author, however, reverts to Genesis 1:1–2 at 61–63 and is able to draw the conclusion from the activities of the second day of creation that the waters above the firmament are finer and brighter than those below (67–68). Surveying the creative acts of days two through four (69–77) leads to a similar conclusion at 78–82 that, since God placed lights in the firmament of heaven to divide the light from the darkness, there is brightness above but darkness below. The elements of fire and air are again noted for their absence (79), and thus it is in earth that darkness resides, and in water brightness. Our author concludes this section of his treatise by citing again the passages from John's Gospel, with the conclusion that the light indeed shines in the water (84–85, "Ex consequenti patet quod lux vigeat in aqua, ut apparet per predicta"). There is no further argumentation on this point.

Just as the first section of this treatise had come to a rather abrupt end with the author's decision not to pursue the argument further (24, "De ista autem ad presens supersedeo"), so now, in a similar fashion, the second section comes to an end with any further discussion explicitly set aside (85, "pretermissis igitur omnibus que possent sequi ex predictis"). The author chooses instead to proceed to his third and main section, his argument to show that water is the primary matter for the generation of metals and the multiplication of species.[22] The shift in argument here is also highlighted scribally in the manuscript by the enlargement of the first two words, *In primis* (87).[23] At first God did create the four elements and it was out of these that he composed everything. In this, our author is following the logical pattern of such twelfth-century philosophers as Thierry of Chartres in his *De sex dierum operibus* or Hermann of Carinthia in his *De essentiis*, who interpreted the biblical account of creation in terms of natural causes, sub-

reation for an Emperor, ed. and trans. S. E. Banks and J. W. Binns (Oxford, 2002), chap. 3, p. 36, "Tradunt alii factam esse divisionem angelorum quando diuisit Deus lucem a tenebris, quasi bonos appellans lucem et malos tenebras."

[22] The author repeats the words *nostrum propositum descendamus* from line 25 (actually *ad propositum nostrum descendamus*) and the opening of section two of his text, but adds the word *aquam* (86) here to specify precisely the focus of his third and main point.

[23] Nowhere else in the manuscript was I able to find a similar occurrence where letters in the middle of a treatise were written in thicker and taller strokes for emphasis. See also n. 38 below for further scribal practice in this treatise.

sequent, to be sure, to God's creation of the four elements and certain God-given evolutionary principles.[24]

The four elements themselves are transmuted one from the other, with fire, which has no beginning, starting the process by condensation. It is water, however, and its moisture that provide the generative, nutritive, and multiplicative power for all things animal, vegetable, and mineral.[25] Water has this power, although it does require the agency of the vital heat (37, 95, 100–101), as well as divine aid (38) or celestial influence (98).[26] It is formless matter that takes on all forms or changes itself into all forms, and gives to all things the power of generating something similar to themselves (99–101).[27] The earth receives moisture from water and from this moist earth arose man and the other animals, as can be found in the book of Genesis (106–9). An early Church hymn is also cited, which speaks of the creation of the birds and fishes from the waters (109–10).[28] The moist earth, too, generates the foodstuffs that nourish and support all animals through the process of digestion, separating the moist from the dry; the grossness or

[24] Thierry of Chartres, *De sex dierum operibus*, ed. N. Häring, "The Creation," 137–216, esp. 156 for Häring's commentary (text on 184-200); *Hermann of Carinthia De Essentiis: A Critical Edition with Translation and Commentary*, ed. Charles Burnett (Leiden, 1982).

[25] This primal role of water is, of course, a traditional concept, dating back to the time of the Ionian philosopher Thales in the early sixth century B.C. See N. Häring, "The Creation," 154, and Thierry of Chartres, *De sex dierum operibus* §28, ed. N. Häring, 194.

[26] See Thierry, *De sex dierum operibus* §28, p. 194: *per calorem*, and Clarenbaldus of Arras, §44, p. 214: *calore immixto*. The "divine aid" of line 38 refers to God the creator (see Thierry, *De sex dierum operibus* §28, p. 193: *per virtutem artificis* and p. 194: *de virtute Creatoris operatoria*); the "celestial influences" of line 98 to the powers of the stars and planets above. See Trevor H. Levere, *Transforming Matter: A History of Chemistry from Alchemy to the Buckyball* (Baltimore, 2001), 5; and Allison Coudert, *Alchemy*, 54, "Like every other branch of science and learning up to the seventeenth century, alchemy was profoundly influenced by astrology."

[27] See Titus Burckhardt, *Alchemy: Science of the Cosmos, Science of the Soul*, trans. William Stoddart (Baltimore, 1971), 63, "Of *materia prima*, the primordial substance, one can only say that it is purely receptive with regard to the form-giving cause of existence and that at the same time it is the root of 'otherness,' for it is through it that things are limited and multiple. In the language of the Bible, *materia prima* is represented by the waters, over which, at the beginning of creation, the Spirit of God moved."

[28] The opening words of the hymn, *Magnae Deus potentiae*, are omitted here but included in the verse as cited in such Victorine and Chartrian authors as Hugh of Saint Victor, *Summa Sententiarum* 3.1 (PL 176:89C); William of Conches, *De philosophia mundi* 1.22 (PL 172:55C) and *Glosae super Platonem*, ed. E. Jeauneau (Paris, 1965), 121; and Clarenbaldus of Arras, *Liber de eodem secundus* §44, ed. N. Häring, 215. The concluding word of the verse seems to be *aera*, rather than *aerem* as here. The hymn, "Magnae Deus potentiae," is the fifth in the series, *De dierum creatione hymni VI*, which were ascribed to Ambrose. With minor variations in wording, the hymn is also part of the Roman Breviary, *Feria quinta ad Vesperas*. See PL 17:1229 and AH 51:37.

thickness (*grossities*) of the food must be broken down so that the fineness (*subtilitas*) of the moisture may penetrate and nourish the body (115–19). Moisture of one kind, in accordance with its nature or species, may transform itself into that to which it is joined and provide it thereby the power to increase and to multiply; for it is of one and the same root (120–24). This moisture, though, must come not from the grossness but the fineness of a compound, just as, although all things are created from water and earth, it is water that is finer than earth (124–26).[29] Water then is proclaimed to be the root of matter, the *genus* of *genera*, since it is what can be transformed into the form of any compound (126–27).

In proceeding now to a consideration of the generation of metals, the author enters more closely the realm of alchemy and of Aristotelianism, too, although he continues to couch his language in general terms. Just like animals and vegetables, he says, minerals also proceed from the moistness of the earth (128–30); this idea can be traced back to a famous passage in Aristotle's *Meteorologica* III.6 (378c), which became one of the basic sources of alchemy.[30] Aristotle identifies two kinds of exhalations that come forth from the earth: one vaporous, the other smoky. The vaporous exhalation, derived from the moisture within the earth, is the cause of all metals. As F. Sherwood Taylor has remarked, "these vapors, we notice, are so subtle that they can pass through stones, yet they can condense to form metals. Aristotle evidently considered the metals to be very closely akin, and the alchemists who followed him were thereby encouraged to think transmutation possible."[31] Pseudo-Thomas Aquinas, in his thirteenth-century commentary on Aristotle's *Meteorologica*, seems to speak positively of alchemy when he adds something not found in Aristotle, namely, that "this mixture or combination requires a celestial virtue which gives the product its occult operations. The celestial virtue is the active principle, the instrumental principle is heat."[32] This tallies well with our author's earlier pronouncements regarding the mediation of heat (101–2), and divine aid (37–38) or heavenly influence (98).

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[29] That water is more subtle or finer (*subtilior*) than earth was also expressed above at line 95.

[30] See the references cited in n. 2 above; also Taylor, *The Alchemists* (n. 14 above), 12–14.

[31] Taylor, *The Alchemists*, 13.

[32] Pseudo-Thomas Aquinas, commentary on Aristotle's *Meteorologica*, Book 3 (Lectio IX ad finem) cited in Taylor, *The Alchemists*, 98–100. In the Leonine edition of the *Opera Omnia*, vol. 7, p. 627, cols. 1 and 2. On the authorship of the commentary, see Newman (n. 1 above), 437 and n. 45.

Minerals, too, putrefy, as if through digestion, and their *subtilitas* or fineness is separated off to be joined with a moisture and transformed into the species of another metal (132–34).[33] On this point, our author parts company with twelfth-century philosophers such as Thierry of Chartres, who had also spoken of water's and moisture's generative power for animals, vegetables, and minerals, but for Thierry metals dissolve into the same moisture, not into that of another metal.[34] Our author has taken the old traditional view of water, cited by Thierry, that "some philosophers thought that water was the prime matter," and adapted its meaning more strictly to an alchemical context.[35]

Aristotle, under the simple appellation philosopher, is now cited in our text for the theory that we are all made of the same stuff as nourishes us (135).[36] A similar citation of Aristotle is given by Thomas Aquinas in *Summa Theologiae* 3.73.5: "ut enim philosophus dicit, in II *de Generat.*, ex eisdem nutrimur ex quibus sumus."[37] This quotation precedes our author's major conclusion, punctuated by his sudden use of the first person singular of the verb and stressed in the manuscript by the rubricating of the word

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[33] Note the adjectival use of the word *mineralem* to modify *speciem* at line 134. The earliest citation of its adjectival use is ca. 1233 in R. E. Latham, *Revised Medieval Latin Word-List* (London, 1965), 299.

[34] "Lapides vero et metalla ex humore fuisse concreata resolutio eorum in eundem humorem ostendit." Thierry, *De sex dierum operibus* §28, ed. Häring (n. 24 above), 194. See also Hermann of Carinthia, *De Essentiis*, Book 2.75vD–76rC, on the generation of minerals, ed. Charles Burnett (n. 24 above), 204–9, and commentary, 330–32, esp. 330, "In deriving material from water Hermann is clearly indebted to the Arabic tradition which was ultimately based on Aristotle's *Meteorologica* (cf. Abū Ma'shar's passing references to *metalla que ex diversis vaporibus congelantur* [*Introductorium* 1.3 (a6v)]; cf. also Nicolaus Damascenus, *De plantis* 2.2; Albertus Magnus, *Meteorologica* 3.5, fol. 116r^{b}; metalla enim non sunt nisi sicut aqua que congelatur vehementia frigoris et siccitatis)."

[35] Thierry §28, p. 194, wherein he cites *priscis philosophis* and *quibusdam philosophis* for the argument that water is the matter of all things.

[36] See Aristotle, *De generatione et corruptione* 2.8 (335a10–11). In *Aristoteles Latinus* IX 1: *De generatione et corruptione*, Translatio Vetus, ed. Joanna Judycka (Leiden, 1986), 71: "omnia quidem enim nutriuntur eisdem ex quibus sunt." Thierry of Chartres has a somewhat similar citation in his *De sex dierum operibus*, ed. Häring, 150 and 188 §13: "omne nutribile ex eodem nutriri, ex quo materialiter constat, physica testatur. Sed corpora stellaria ex humore nutriri physici dicunt. Videntur igitur ex aquis materialiter constare."

[37] For the Latin text, see Aquinas, *Summa theologiae*, 5 vols. (Ottawa, 1941–45), 4:2925b. Note that Aquinas and our anonymous author have turned the impersonal Aristotle quotation into a more personal first person plural observation. Of more import for our author may be Aquinas's quotation of this passage in his *Commentary on Aristotle's* Metaphysics 1.3, wherein the philosopher is speaking of Thales' position that "moisture is the principle of being." See Aquinas, *In Metaphysicam Aristotelis Commentaria*, ed. M.-R. Cathala (Turin, 1926), 1.4.80: "Ex eodem autem viventia nutriuntur et sunt; et sic humor videtur esse principium essendi."

concludo in line 139.[38] He terms minerals, especially metals, to be light and water, since "they change into water more quickly and shortly than into any other compounded thing" (136–37), and from water come not only generation, increase, and multiplication, but also moisture, and moisture can be extracted from metals. On that basis, he concludes that "since all moisture is from one and the same root, namely water, the moisture created from water can be conjoined with the moisture or seed of metals, and from them could follow increase, generation, transformation, fructification, and multiplication, just as was said in the case of animals and vegetables" (139–43). The author emphatically drives his point home by using the imperative singular, *scito*, "know" (143): "Know that that moisture is the primary matter of which Aristotle speaks when he says, 'the species of metals cannot be transformed or transmuted unless perhaps they be reduced to their primary matter'" (143–46). This quotation comes from the so-called *De mineralibus* of Pseudo-Aristotle, a work that was attached as a fourth book to Aristotle's genuine *Meteorologica*.[39] The quotation is part of a denial of the validity of any alchemical transmutation, since metals could not be reduced to their primary matter. This pseudo-Aristotelian concept is also cited by Albertus Magnus, in the thirteenth century, but he is aware that the eleventh-century Arabic physician and philosopher, Avicenna, is its true author.[40] Throughout the thirteenth century and later, however, there remained those who continued to ascribe this work to Aristotle.[41] Aristotle was known as the Philosopher, and his denial of the power of alchemy was especially meaningful.[42] Our treatise seems to have been composed as a response to this "Aristotle." Water is identified as prime matter and, although Pseudo-Aristotle had denied the possibility of the transmutation of metals, it was with the pro-

[38] As for the use of the first person, *composui* and *dico* had been used in line 3; *supersedeo* in line 24; otherwise the first person plural had been used several times (*in fide nostra* 17; *propositum nostrum descendamus* at 25 and 86; *sumus* and *nutrimur* at 135). The rubrication of a word in the middle of a treatise is rare, but not without precedent, in this manuscript. See also n. 23 above, for further scribal practice in this tract.

[39] See n. 1 above. Also see William R. Newman, *Promethean Ambitions*, 43–44.

[40] Albertus Magnus, *Book of Minerals* 3.1.9, trans. Dorothy Wyckoff (Oxford, 1967), 178, although apparently he too once thought the work to be by Aristotle. See Newman, *Promethean Ambitions* (n. 17 above), 44–46. Roger Bacon also, ca. 1245, believed the work to be Aristotelian, but by 1266 he had dismissed it as "a second-rate commentary by Alfred of Sareshel." See Newman, "Technology and Alchemical Debate" (n. 1 above), 433.

[41] See Newman, *Promethean Ambitions*, 294 and n. 10.

[42] See ibid., 44: "a world where Aristotle was referred to customarily as 'the prince of the philosophers,' or simply as 'the philosopher.'" It is somewhat interesting that our author has used the appellation, "the prince of philosophers," to signify Hermes Trismegistus above at line 26.

viso: unless first these metals were reduced to prime matter. Our author found in the waters of creation, filtered through the alchemical doctrine of the unity of matter and the Aristotelian theory of the generation of animals, vegetables, and minerals from moisture, proof that metals could be transmuted. There was thus no inconsistency in Aristotle, and there was a congruence between theological and scientific truths.

Our author's conclusion comes rather abruptly, bolstered by further examples of scriptural testimony from the Old and New Testaments, which, although they do not support any specific claim for the generation of metals and the multiplication of species, do testify to the efficaciousness and the primacy of water. He quotes from Psalm 71:6, "He shall come down like rain upon grass," and Isaiah 45:8, "Drop down dew, ye heavens, from above" (149–51).[43] He mentions the waters of baptism, the miraculous changing of water into wine at Cana, and, again from the Old Testament, Jonah and the whale and the leper cured by the waters of the river Jordan (151–56). These witnesses seem hurried, meant to impress as much by their number as their weight. As suddenly as we were swept through the scriptural passages, so we find ourselves, in a six-line sentence (159–64), in the realm of the alchemist's laboratory with its philosopher's stone, the aim being to achieve the transformation and multiplication of metal through its reduction to moisture. The author gives us an insight into his intentions by revealing his familiarity with the specialized vocabulary (*vas*: a special vessel; *minera*: mine) and desiderata (*virtus loci*; the proper heat) for a practical application of alchemy.[44] No more detail, however, is forthcoming or even hinted at. The treatise concludes, rather, with a prayer to God to show the way to such art, followed by an invocation of God who is blessed forever and ever, Amen.[45]

Theology and alchemy came together in a special way in the thirteenth century, when Scholastic authors approached the art of alchemy with a crit-

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[43] Isaiah 45:8 is sung at Vespers on the feast of the Annunciation; it is also part of the Advent liturgy. See the *Liber Usualis*, ed. Benedictines of Solesmes (New York, 1962), 1414 and 1080, 316–58 passim.

[44] See E. J. Holmyard, *Alchemy* (orig. publ. 1957; repr. Baltimore, 1968), 43–59: chapter 4, "Alchemical Apparatus." Cf. Newman, *Promethean Ambitions*, 51, who speaks of Thomas Aquinas and "the concept of *virtus loci* — the power of a specific place. His idea is that metals can be generated only by natural heat operating in the subterranean chambers where ores and metals come into being."

[45] The "qui ubi vult spirat" of line 164 is taken from John's Gospel 3:8, where, instead of *qui*, the subject given is *Spiritus:* "The Spirit breatheth where he will." It is somewhat curious that our author does not pursue this section of John's Gospel further. In verse 3:5 can be found the words "Amen, amen I say to thee, unless a man be born again of water and the Holy Ghost, he cannot enter the kingdom of heaven."

ical eye.[46] Alchemy had gained popularity in the Latin West in the twelfth century, and it was at the beginning of the thirteenth century that this Aristotelian attack on alchemy surfaced. By the second half of the thirteenth century, authors such as Albertus Magnus and Roger Bacon were aware that its attribution to Aristotle was false.[47] Our treatise's relatively unsophisticated argument, designed to explain away the difficulty behind this Aristotle, may also offer clues to its dating by what it does not say. There is no mention, for example, of the sulphur/mercury theory (as an intermediate formation of Aristotle's two exhalations from the earth), which was a commonplace by the thirteenth century.[48] Of course, our author may simply be omitting what was not relevant for his argument. The alchemical and hermetic component of his argument is relatively negligible. Natural philosophy and theology are more relevant, and in this he is looking backward, in a way, to the twelfth-century Victorine and Chartrian authors cited above. More positive evidence also may be seen in our author's care to establish his orthodoxy at lines 17–18 and 22, that the Holy Spirit proceeds from the Father and the Son. This too had been a thirteenth-century issue.[49] It seems likely therefore that this treatise was an early response to Aristotle and thus dates to the first half of the thirteenth century.

[46] See Newman, *Promethean Ambitions*, 43–54.
[47] See n. 40 above.
[48] See Roberts, *The Mirror of Alchemy* (n. 16 above), 50–51.
[49] See p. 152 and n. 13 above.

De generatione metallorum et multiplicatione specierum

(MS Clm 26059, fols. 284v–289v)

[284v] Cum multi sint in desperatione generalis generationis metallorum et multiplicationis specierum, ad hoc ut animus eorum in vera ordinatione primi creantis cuncta quiesceret, composui que sequuntur. Unde dico quod vera ordinatio primi creantis est hec. Cum ipse solus in sua essentia esset, secundum quod in principio Genesis dicitur, "In principio creavit deus celum et terram," illud principium non est nisi filius, et per filium fecit dominus celum et terram. "Omnia" enim "per ipsum facta sunt," ut habetur in Iohanne, "et sine ipso factum est nichil." Nam sine dubio in dei nomine pater et in nomine principii filius intelligendus est.

Et cum dixisset, "in principio fecit deus celum et terram," non loquendo de aliis elementis statim subiunxit, "et spiritus domini ferebatur super aquas," qui est tertia persona in [285r] trinitate. Videtur sequi per predicta quod dicat filium esse principium creaturarum et spiritum dei ferri super aquas et deum esse principium, quod hec tria requiruntur ad creationem omnium. Pater tanquam principium primum genuit filium, spiritus autem sanctus genitus non est a patre, quia sequerentur duo filii. Nec est a filio genitus, quia sequeretur quod essent duo patres, et in fide nostra credenda est trinitas ab utroque procedens.

Sequitur ergo si pater est, filius est, et si filius est, et pater est. Pater ergo sine filio, nec filius sine patre. Pater ergo et filius unum sunt, ergo et unus deus. Et cum dicatur, "et spiritus domini ferebatur super aquas," sequitur quod spiritus sanctus procedat ab utroque, cum unum sint pater et filius. Sequitur etiam quod ista tria unum sint, quia deus in quo, scilicet, in qua trinitate, omnia sunt. De ista autem materia ad presens supersedeo, alterius enim est considerationis, et ad propositum nostrum descendamus.

Dicit Hermes, id est, princeps et pater philosophorum, "verum, id est, certum est, sine mendacio, certum, verissimum. Illud quod est superius est id quod est inferius, et econverso." Si ergo inferius habemus duas activas [285v] qualitates, scilicet, calidum et frigidum, et ex calido et frigido procedit humiditas, superius etiam habemus patrem et filium et ex ipsis procedit spiritus sanctus.

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3 quiesceret] quiescerent **MS**

5–6 Gen. 1:1 7–8 John 1:3 10 Gen. 1:1 11–12 Gen. 1:2 21 Gen. 1:2 26–28 *Tabula Smaragdina* 1–2

Sicut etiam superius pater et filius et spiritus sanctus unum deum efficiunt, ita inferius corpus et anima et spiritus unum compositum constituunt. Verum ad trinitatem que creatrix est omnium sequitur quartum, scilicet, creatura sua; sic ab aqua que in se tria continet, videlicet, calidum, frigidum, et humidum, sequitur quartum, scilicet, siccitas. Nam condensari potest et inde terra concreari. Et ex ipsa aqua et terra, calore mediante divinoque auxilio, concreantur omnia composita inferiora et etiam supercelestia a primo creatore creata.

Fecit enim, ut dictum est, in principio, id est, in filio, celum et terram in una massa confusa, in qua videtur quod aqua dominabatur. Nam dicitur in Genesi quod "spiritus domini ferebatur super aquas," non loquendo de igne et aere; ut dicitur in evangelio, "quod factum est in ipso," id est, in principio, "vita erat, et vita erat lux hominum" et etiam omnium creaturarum et omnium inferiorum. Et cum pater, filius, et spiritus sanctus unum sint, deus, scilicet, et in ipso sint omnia creata, videlicet vita et lux in eis, scilicet, in creatis. Spiritus autem sanctus, qui super aquas ferri [286r] dicebatur, lux et vita dici potest. Sequitur ex hoc quod dicebatur, "spiritus domini ferebatur super aquas," quod aque erant supra celum et terram. Unde in Psalmo, "aque, que super celos sunt, laudent nomen domini." Et per hoc opinari debemus, cum dicitur "deus creavit celum et terram," quod intelligitur de firmamento et de his que sunt supra firmamentum, que in prima creatione erant una massa confusa. Quam massam divisit in quatuor, scilicet, in calidum, frigidum, humidum, et siccum. In calido et humido vita et lux continetur, et in frigido et sicco condensatur firmitas et obscuritas. Et hoc apparet cum dicitur quod separavit deus lucem a tenebris. Intelligendum est quod ex illa massa angelos bonos et malos ab invicem divisit.

Postea dicit: et divisit aquas ab aquis, fecit enim firmamentum in medio aquarum. Aque inferiores circumdabant terram; et separavit aquas a terra. Et ita ordinavit eas per fontes et rivulos ut totam terram rigantes eam germinare facerent. Et cum dicitur, "in principio creavit deus celum et terram. Terra autem erat inanis et vacua, et tenebre erant super faciem abyssi, et spiritus domini ferebatur [286v] super aquas."

Ad hoc quod loquitur de celo et terra, sequitur quod celum esset aquarium, sic et abyssus aquarum tenebrosa. Et cum fecisset lucem et separasset eam a tenebris et posuisset firmamentum in medio aquarum, quod vocavit

45 sint] sunt **MS**

42 Gen. 1:2 43–44 John 1:3–4 48–49 Gen. 1:2 50 Ps. 148:4–5; cf. Hugh of Saint Victor, *Summa sententiarum* 3.1 (PL 176:89B) 51 Gen. 1:1 56 Gen. 1:4 58–59 Gen. 1:6–9 60–61 Gen. 1:11–12, 2:6 61–63 Gen. 1:1–2

celum, videtur per hoc quod aque superiores sunt subtiliores et clariores aquis inferioribus.

Et cum dicitur in Genesi, "fiant luminaria in firmamento celi, et dividant diem ac noctem," fecitque duo luminaria, maius et minus, et stellas; et hec omnia "posuit in firmamento celi ut lucerent super terram et preessent diei ac nocti et dividerent lucem" a tenebris. Et cum separasset in secunda aquas superiores ab inferioribus, posito firmamento in medio earum, in tertia aquas inferiores congregavit ut arida appareret; precepit et aridam terram germinare herbamque virentem facientem fructum et semen iuxta suam speciem producere. In quarta die duo luminaria predicta fecit ut illuminarent terram, et per ea appareret divisio lucis a tenebris.

Sequitur ergo quod solum superius, id est, supra firmamentum, remansit claritas, inferius vero obscuritas. Et cum non loquatur de igne et aere, nisi solum de aqua et terra tenebrosa, et illa luminaria ad [287r] illuminandum eam sint ordinata, in ea ergo, videlicet, terra, remanet obscuritas, in aqua vero claritas.

"In principio erat verbum"; "quod factum est in ipso vita erat et vita erat lux hominum." Ex consequenti patet quod lux vigeat in aqua, ut apparet per predicta. Pretermissis igitur omnibus que possent sequi ex predictis, ad aquam que est nostrum propositum descendamus.

In primis creavit deus quatuor elementa ex quibus omnia composuit, scilicet, ignem, aerem, aquam, et terram. Que a se invicem generantur absque igne qui caret principio absque suo creatore. Ex inspissatione ignis aer concreatur, ex inspissatione aeris aqua concreatur, et ex inspissatione aque terra concreatur. Ex rarefactione terre econverso similiter aqua concreatur, ex rarefactione aque aer concreatur, et ex rarefactione aeris ignis concreatur. Ignis et aer inpalpabiles sunt propter eorum subtilitatem; aqua et terra palpabiles propter eorum grossitiem.

Aqua est subtilior terra. Per quam aquam vel per eius humiditatem omnia vegetabilia, animalia, et mineralia generantur, nutriuntur, et multiplicantur; fructus ferunt et semina, et virtutes in animalibus crescunt, mediante calore et influentiis celestibus [287v] iuvantibus.

Est enim materia recipiens omnes formas, sive ad omnes formas se convertens, et dans virtutes omnibus rebus generandi sibi simile mediante calore, ut dictum est. Verbi gratia, terras germinare facit et ex humore terre germinat, terre multiplicantur, et crescunt arbores terre, et herbe semina et fructus afferunt multiplices. Hunc humorem recipit terra ab aqua, cum de se sit inanis et vacua, id est, terra. Etiam carnes sive animalia generantur, crescunt, et multiplicantur, et virtus generandi conservatur.

69–70 Gen. 1:14 70 Gen. 1:16 71–72 Gen. 1:17–18 72–77 Gen. 1:6, 9, 11–12, 16, 18 83–84 John 1:1, 3–4

Nam ex humore terre sive ex terra subtili continente humorem producti sumus, et etiam animalia non reptilia et aliqua reptilia, pisces et omne volatibile secundum speciem et genus suum ex aqua. Et hoc ex libro Genesis confirmatur. Unde etiam in principio recolit ecclesia: "qui ex aquis ortum genus partim remittis gurgiti, partim levas in aerem," ut videtur sensualiter. Nam animalium et hominum victualia ex his que ex humore terre procedunt, videlicet, ex fructibus, herbis, et seminibus; ex istis carnes argumentantur seu augmentantur, et predictas virtutes recipiunt cum aqua que est potus earum et calore digerente.

Ista tamen victualia predicta non faciunt, dum sunt in sua [288r] grossitie. Ymmo putrefiunt per digestionem, et fit separatio humoris et aride, et humoris subtilitas ascendit per membra et corpus nutrit et augmentat, et arida cum sua grossitie dividitur per meatus ad hoc in corporibus animalium ordinatos, cum in omnibus diversis speciebus vegetabilium et animalium sit.

Iste humor ex una parte et una re est, et humor unius plaudat humori alterius tanquam suo simili, respuens quod non est de sua natura vel specie. Et iungitur cum illo, sicut aqua cum aqua, transformando se in speciem cui adiungitur, eam augmentando, et virtutem tribuendo multiplicandi se; ex una et eadem radice videturque procedere. Iste humor etenim non ex grossitie compositi, sed ex subtilitate, ut omnia ex aqua et terra creantur. Ergo aqua est subtilior terra. Sequitur quod aqua est radix rerum et genus generum, cum in formam cuiuslibet compositi valeat transformari.

Quod autem dictum est de vegetabilibus et animalibus eodem modo intelligendum est de mineralibus. Nec est dubium quin ab humore terre procedant. Et hoc manifeste videtur quod ex humore terre fiunt aque que resolvunt omnia metalla et lapides per artem et secundum naturam. [288v] Etiam omnia mineralia putrefiunt, et ab eis separatur subtilitas eorum que coniungi potest cum quocumque humore et transformari possit in speciem alterius, vel alii humores in speciem mineralem.

Nam secundum philosophum ex eisdem sumus et nutrimur, sic et in aliis. Et cum mineralia, maxime metalla, sint lux et aqua, quod apparet quia citius et brevius in aquam convertuntur quam in alia composita, et ex aqua sequitur generatio et augmentatio et multiplicatio, ut dictum est, et ex aqua fit humor, et humor ex metallis extrahi potest, concludo quod cum omnis humor sit de una et eadem radice, scilicet, de aqua, quod humor ex aqua

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118 dividitur] dividunt **MS** 119 ordinatos] ordinatas **MS** vegetabilium] vegetabilibus **MS** 127 formam] forma **MS**

106–9 Gen. 1:20–26, 2:4–7 109–10 Ps.-Ambrosian hymn, "Magnae Deus potentiae," vv. 2–4 (PL 17:1229, AH 51:37); part of Roman Breviary, *Feria quinta ad Vesperas*
135 Aristotle, *De generatione et corruptione* 2.8 (335a10–11)

concreatus potest coniungi cum humore seu spermate metallorum, et ex eis sequi augmentatio, generatio, transformatio, fructificatio, et multiplicatio, prout dictum est in animalibus et vegetabilibus. Et scito quod iste humor est prima materia de qua intendit Aristoteles, cum dicit, "species metallorum transformari non posse vel transmutari; nisi forte reducantur in primam materiam." Et quod una res, scilicet, predicta, sit radix omnium vegetabilium et mineralium, hoc evidenter in [289r] omnibus libris physicorum intelligentibus apparebit.

Predicta etiam Scriptura testatur, cum dicit, "sicut pluvia in vellus descendisti, etc. Et etiam in ecclesia cantatur in annuntiatione dominica, "rorate, celi, desuper, etc." Deus etiam confirmat, nam per baptismum aqua nos regeneravit et per humorem suum nos redemit. Ipse enim hanc aquam divinam de paradiso eduxit et divisit in quatuor flumina ut totam terram rigaret.

Aquam etiam in Chana Galilee mutavit in vinum. Apparet etiam quod hec aqua sit venerabilis per piscem in quo Ionas salvatus fuit, et per Iordanem in qua Naman curatus fuit a lepra. Et etiam alia testimonia possent ibi adduci quam plurima ex Scriptura Sacra, sed hec sufficiant.

Ita autem istam invenire et etiam scire aptare in suo vase seu in sua minera in loco decenti, dare sibi calorem debitum, et procedere usque ad finem operis, videlicet quod ista radix humoretur, id est, fiat humor et cum alio humore coniungatur, et quod possit transformari in speciem cuiuscumque metalli et inde multiplicari, sicut de vegetabilibus et animalibus superius ostensum est. Qui "ubi [289v] vult spirat," et quod omnibus artem fideliter prestare dignetur querentibus. Qui est in secula seculorum benedictus.

Amen.

Fordham University

144 species] speties **MS** 157 curatus] creatus **MS**

144–46 See Avicenna, *De congelatione et conglutinatione lapidum* (n. 3 above), 54–55 149 Ps. 71:6 151 Isa. 45:8; sung at Vespers on the Feast of the Annunciation 152–54 Gen. 2:10 155 John 2:1–11 155–56 Jonah 2 156–57 2 Kings 5:10–14 164 John 3:8