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## The Commentary of Alfred of Shareshill on the Pseudo-Aristotelian *De mineralibus*

The repertory of the works known to have been written by Alfred of Shareshill, a leading figure in English intellectual culture at the beginning of the 12th century, contains seven items: the treatise *De motu cordis*<sup>1</sup>; the translation of Nicholas of Damascus's *De plantis* with a corresponding commentary<sup>2</sup>; a commentary on the four books of Aristotle's *Meteorologica*<sup>3</sup>; and, finally, a commentary on the *De mineralibus*, a short abstract from the mineralogy of Avicenna's *Kitāb al-Šifā'* that Alfred selected, translated into Latin, and commented upon<sup>4</sup>. All of these commentaries appear in the form of a more or less extensive marginal gloss.

These texts are currently available in modern editions, except for the commentary on *De mineralibus*, which still remains unedited. The present article provides a description of this text.

A commentary beginning with the words *A luto igitur viscoso* was identified in 1993 by James K. Otte, a renowned specialist in Alfredian studies<sup>5</sup>, in the last folios of the manuscript Oxford, Bodleian Library, Selden supra 24 (ff. 113r-114v). Otte limited himself, however, to a synthetic description and did not follow through to present a complete edition of the text, which was almost impossible

<sup>1</sup> ALFREDUS ANGLICUS, *De motu cordis*, hrsg. von C. BAEUMKER, «Beiträge zur Geschichte der Philosophie des Mittelalters», 23, Münster i. W. 1923.

<sup>2</sup> NICOLAUS DAMASCENUS, *De plantis. Five translations*, edd. H. J. DROSSAART LULOFS, E. L. J. POORTMAN, Amsterdam, North-Holland 1989 (Aristoteles Semitico-Latinus); R. J. LONG, *Alfred of Sareshel's Commentary on the Pseudo-Aristotelian De plantis: a Critical Edition*, «Mediaeval Studies», 47, 1985, pp. 125-167.

<sup>3</sup> J. K. OTTE, *Alfred of Sareshel's Commentary on the Metheora of Aristotle. Critical Edition, Introduction, and Notes*, Brill, Leiden - New York - København - Köln 1988.

<sup>4</sup> AVICENNA, *De congelatione et conglutinatione lapidum*, Being Sections of The *Kitāb al-Šifā'*. The Latin and Arabic Texts, edited with an English translation of the latter and with critical notes, edd. E. J. HOLMYARD, D. C. MANDEVILLE, Geuthner, Paris 1927; *De mineralibus*, transl. ALFREDI SERESHALENSIS, ed. R. FRENCH, in Id., *Teaching Meteorology in Thirteenth-Century Oxford: The Arabic Paraphrase*, «Physis. Rivista Internazionale di Storia della Scienza», 36, 1999, pp. 99-129; E. RUBINO, *Il De mineralibus di Avicenna tradotto da Alfredo di Shareshill*, «Bulletin de philosophie médiévale», 58, 2016, pp. 23-87.

<sup>5</sup> J. K. OTTE, *Alfred of Sareshel's Commentary on Avicenna's De congelatione et conglutinatione lapidum*, in G. FREIBERG ed., *Aspectus and affectus: Essays and Editions in Grosseteste and Medieval Intellectual Life in Honor of Richard C. Dales*, New York, AMS Press 1993, pp. 105-111.

at the time due to the serious deterioration of the last part of the codex. The folios in this section are in fine battered parchment, but are so gravely damaged — especially by water stains, tears and wide abrasions — that they still appear «in an abominable condition», to quote Otte's words<sup>6</sup>.

Although the condition of the codex has not changed, techniques for its reproduction have considerably improved. In fact, thanks to a series of digitisations of the manuscript under UV light, made kindly at my request by the staff of the Bodleian Library (Imaging Services), it is now possible to attempt, upon careful reading, an edition of these glosses. It is surely not possible to read the whole text, especially the last gloss located on the left, irremediably abraded, margin. Nor will it be possible in the future to reconstruct the contents of the penultimate folio of the codex (between the actual ff. 113 and 114), which was lost centuries ago<sup>7</sup>, mainly due to the lack of analogous witnesses. However, I believe that at least an attempt to publish this text is needed today.

The Bodleian glosses contain, in fact, the first known medieval commentary on the *De mineralibus* and represent, together with the commented text, an important step in the scientific study of mineralogy. In Alfred's work, deeply marked by the new science that came from the Arabic world — to which he had first-hand access — stones and minerals were, for the first time in the Middle Ages, no longer regarded only as instruments of superstition or mere pharmacopoeia, but rather interpreted to be a result of physical processes that can be examined in scientific terms. In the scientific culture of the 13th century, in which natural phenomena were being studied increasingly more through direct observation and rational analysis than through imaginary beliefs, Alfred played a pivotal role in rediscovering and diffusing Aristotelian or pseudo-Aristotelian texts, which turned out to be crucial for the further development of medieval scientific thought.

With the edition of the glosses on the *De mineralibus*, Alfred of Shareshill's entire legacy is now made available to the public<sup>8</sup>.

#### THE MANUSCRIPT TRADITION AND TEXTUAL PROBLEMS

The commentary on *De mineralibus* is not an isolated work, but belongs within the wider context of the so called *Liber metheororum*<sup>9</sup>, a collection which

<sup>6</sup> OTTE, *Alfred of Sareshel's Commentary on Avicenna's cit.*, p. 107: «Some pages are smudged, others are illegible because the writing of the reverse side shows through. Even an examination using an ultraviolet lamp met with little success».

<sup>7</sup> This fact has gone unnoticed by scholars.

<sup>8</sup> In his commentary on *Meteorologica*, Alfred mentions another of his works: a commentary on *De generatione et corruptione*. This text has not been found.

<sup>9</sup> E. RUBINO, *Alfredo di Shareshill editore della Meteorologia aristotelica*, «Giornale critico della filosofia italiana», 94, 2015, pp. 479-496.

Alfred composed around 1190 and which had the merit of spreading Aristotelian meteorology in the Middle Ages. Alfred put together the translation from Arabic into Latin by Gerard of Cremona (†1187) of the books I-III of Aristotle's *Meteorologica*, with the translation from Greek into Latin by Henricus Aristippus (†1162) of book IV; and, at the end, he added the *De mineralibus*, a short treatise on mineralogy, which he himself compiled based on two chapters (I, 1 e I, 5 of *fann* V) from Avicenna's *Kitāb al-Šifā'*, translated from the original Arabic<sup>10</sup>.

This compilation was then commented upon by Alfred in a systematic way, initially in the form of marginal glosses. The main witness of this work is the already mentioned codex Oxford, Bodleian Library Selden supra 24, which, according to Otte, provides a more or less faithful reproduction of the Alfredian archetype in its original *facies*, consisting of text in the middle of the page with a marginal contour commentary. In the case of the commentary on books I-IV of the *Meteorologica*, the gloss was subsequently transformed into a continuous text, and it is preserved by two other manuscripts in this form<sup>11</sup>. This was not, however, the case for the *De mineralibus*, to which there are no known witnesses other than the Bodleian codex.

One should not assume, however, that the fortune of this last text is restricted only to the Bodleian manuscript, since there are copious traces of a circulation of glosses that were attributed to Alfred, and that in some cases seem to stem from a text even more complete than that of the Bodleian manuscript. Among them, let us focus on two documents that are already known to scholars thanks to the identification made by Otte<sup>12</sup>:

1) the unedited commentary on the *Liber metheororum* by Adam of Bockenfield (or Bockfeld), in which the author mentions glosses, attributed to «Al.» or

<sup>10</sup> A. BERTOLACCI, *A Community of Translators: The Latin Medieval Versions of Avicenna's Book of the Cure*, in C. J. MEWS, J. N. CROSSLEY eds., *Communities of Learning. Networks and the Shaping of Intellectual Identity in Europe, 1100-1500*, Brepols, Turnhout 2011, pp. 37-54: pp. 43-44, 50-51; AVICENNA (IBN SĪNĀ), *Libro della guarigione. Le cose divine*, ed. A. BERTOLACCI, UTET, Torino 2008, pp. 11-18, 26-30, 80-83. RUBINO, *Il De mineralibus* cit.; J.-M. MANDOSIO, *Follower or Opponent of Aristotle? The Critical Reception of Avicenna's Meteorology in the Latin World and the Legacy of Alfred the Englishman*, forthcoming; J.-M. MANDOSIO, C. MARTINO, *La Météorologie d'Avicenne (Kitāb al-Šifā' V) et sa diffusion dans le monde latin*, « *Miscellanea mediaevalia* », 33, 2006, pp. 406-424. A third section of *fann* V of Avicenna's *Šifā'* (chapter II, 6) was also translated into Latin with the title of *De Diluviis in Thimaenum Platonis*: on the translation of this section, see the article of Silvia Di Donato in the present volume; on Michael Scot as author of this translation, see D. N. HASSE, *Notes on Anonymous Twelfth-Century Translations of Philosophical Texts from Arabic into Latin on the Iberian Peninsula*, in D. N. HASSE, A. BERTOLACCI eds., *The Arabic, Hebrew and Latin Reception of Avicenna's Physics and Cosmology*, De Gruyter, Berlin (Scientia Graeco-Arabica), forthcoming.

<sup>11</sup> Mss.: Durham, Chapter Library, C. III, 11v-18r and Paris, Bibliothèque Nationale, Latin 7131, 82v-85r. Cf. OTTE, *Alfred of Sareshel's Commentary on the Metheora* cit., pp. 31-33.

<sup>12</sup> *Supra* n. 5.

«Aluur' », that have been only partially included in the Bodleian codex. Adam's testimony is, however, rather ambiguous, since he cites Alfred in a synthetic and non-literal way;

2) the manuscript Vatican, Urb. lat. 206, ff. 253v-254r, which, under the attribution «Alf.» preserves quotations of the glosses on the *De mineralibus*, likely extracted from Alfred's text in the Bodleian codex, and other Alfredian fragments that do not trace back to it.

To these two documents, a third one must be added, which I identified during the investigation on the manuscripts of the *Liber metheororum* preliminary to the edition of the Latin translation of the IV book of the *Meteorologica* (Aristoteles Latinus X.1)<sup>13</sup>. This third testimony is the manuscript Leipzig, University Library, 1392, containing the *De mineralibus*<sup>14</sup> along with marginal Alfredian glosses marked by «Al.». Also here, as in the case of the Urb. lat. codex, there are some fragments attributed to Alfred which do not correspond to the Bodleian manuscript<sup>15</sup>.

Finally, a fourth useful source is Albert the Great's *Mineralia*, in which there are two passages, in particular, where the author — albeit non quoting explicitly Alfred — seems to show some knowledge of the Alfredian commentary. The following table provides a synopsis of Albert's and Alfred's relevant texts: text of *De mineralibus* to which glosses refer are in square brackets and passages that show a clear connection between the two authors are marked in italics.

<sup>13</sup> ARISTOTELES, *Meteorologica: Liber quartus. Translatio* HENRICI ARISTIPPI, ed. E. RUBINO, Brepols, Turnhout 2010 (Aristoteles Latinus X.1).

<sup>14</sup> ARISTOTELES, *Meteorologica: Liber quartus* cit., p. XIII.

<sup>15</sup> *Infra* pp. 359-362.

ALBERTUS MAGNUS, *Mineralia, Opera omnia*, ed. A. BORNET, Paris 1890, vol. 5, pp. 1-116.

(1) Causa vero efficiens lapidum ab omnibus fere qui sermonem de lapidibus fecerunt, dicitur esse *virtus mineralis*. Cum autem haec virtus communis sit tam in lapidibus quam in metallis omnibus operans, insufficienter videbitur esse assignata causa lapidum efficiens [...]

(Liber I, Tractatus I, Caput IV, 5)

Post lapidum autem cognitionem ponimus tractatum de metallis: quia sicut diximus, *lapis semper fere invenitur locus generationis esse metallorum* (Liber III, Tractatus I, Caput I, 59)

(2) Et tales aquas que virtute et non actu habent qualitates diversorum elementorum, supra modum student facere alchimici, ut per eas exsiccet et coagulent hoc quod volunt transmutare: propter hanc causam habent *libros de XII aquis conscriptos* (Liber I, Tractatus I, Caput IX, 13)<sup>a</sup>

<sup>a</sup> *Infra* n. 17

ALFREDUS ANGLICUS, *Glossae super De mineralibus*, *infra* pp. 10-11.

[*discontinuantur subito virtute (minerali) quadam que exit a terra in hora terremotus*] Hoc fit ad similitudinem generationis metallorum ...

(Glossa V)

[*lac virginis estque eius*]

qualiter autem et ex quibus lac virginis et cetera coagulantia componantur, in *libro de duodecim aquis docetur*.

(Glossa III)

In the first text (1), Albert equates metal generation with stone generation as a result of some form of *virtus mineralis*. He clearly refers to the text of the *De mineralibus*, in particular to the idea that the capacity for petrification derives from a certain mineral *virtus* that is produced in *hora terremotus*<sup>16</sup>. Remarkably, in the pseudo-Aristotelian text there is no mention of the formation of metals that Albert mentions, while the correlation between the two types of generation can be found in Alfred's gloss, suggesting that the latter could have been one of Albert's sources.

In the second passage (2), Albert refers to the features and action of a substance used by the alchemists to solidify bodies by drying them out, and to transform the nature of one type of matter into another. This second substance is the *lac virginis* mentioned in the *De mineralibus*. According to Albert, the way

<sup>16</sup> RUBINO, *Il De mineralibus* cit., p. 36, 33.

*lac virginis* is produced can be learnt from the « books about twelve waters », *libros de XII aquis conscriptos*, and not, as the two editions of the text attest, *libros de septem aquis conscriptos*<sup>17</sup>. Remarkably, in the third gloss, Alfred, while examining the same topic of the *lac virginis*, quotes the same source and writes: *in libro de duodecim aquis*. Thus, although Albert might draw this reference from the same source that Alfred quotes, rather than from Alfred himself, the possibility that he depends exclusively on Alfred for his acquaintance with the *libri de XII aquis* has to be taken into serious consideration. Therefore, not only the first, but also the second passage of Albert's *Mineralia*, if interpreted in this way, demonstrates a direct dependency on the Alfredian text. We may rightly suppose, in conclusion, that Albert had access to the Alfredian glosses.

#### THE CONTENT OF THE COMMENTARY

The main subject of the commentary on the *De mineralibus* is the process of solidification, which is due to the effects of heat and cold, and based on the properties of a body. Alfred deals with the following topics: the melting of viscosity and its solidification due to the effects of heat and cold; solidification of substances in which water predominates – similar to what happens with salt; the formation of fossils; the inflamed vapour produced in the depths of the Earth during earthquakes and able to solidify, as well as the vapour formed during a solar eclipse; the thick and earthy (dry) nature of the *lac virginis*, a liquid that, according to Alfred's annotations in the *De mineralibus*, is composed of two waters and used by alchemists (*quidam ingeniosi*) in order to solidify dry matter.

Its language and style are consistent with the rest of the commentary on the *Liber meteororum*. The expression *unde et* (meaning 'and so'), for example, appearing here 5 times, recurs 28 times in the commentary on books I-IV of *Meteorologica*, and can be found also in the commentary on the *De plantis* and in the *De motu cordis* (10 times in the first case, and 1 time in the second one); two glosses, the first and the fourth in the Bodleian manuscript, reveal an evident correlation with the commentary on the second and third books of Aristotelian *Meteorology*.

The first gloss<sup>18</sup> focuses on the origin of stones from viscous mud; it deals with an initial passage of the *De mineralibus*<sup>19</sup>, and begins with « A luto igitur

<sup>17</sup> Both available editions are mistaken concerning this quotation (ALBERTUS MAGNUS, *Mineralia, Opera omnia*, ed. A. BORGNET, Paris 1890, vol. V, p. 13; ALBERTUS MAGNUS, *De mineralibus, Opera omnia*, ed. P. JAMMY, Lyon 1651, p. 217). At the end of Caput IX, Liber I, Tractatus I, we read *habent libros de septem aquis conscriptos*, but the manuscripts attest *habent libros de XII aquis conscriptos*.

<sup>18</sup> *Infra* Glossa I, p. 359.

<sup>19</sup> RUBINO, *Il De mineralibus* cit., p. 35, 7-10: « Lutum vero huic transmutationi aptius est viscosum [...] In ripis quoque Gion visa est terra [...] in lapidem converti in spatio XXIII annorum ».

viscoso ». Alfred explains that properties present in the viscous substance solidify gradually. In certain stones, however, liquidity and viscosity are combined in such a way that they cannot be separated even by roasting them (in this context the author uses an Aristotelian term, *obtesis*, from ὀπτησις, to indicate roasting; that is, the baking produced by dry external warmth<sup>20</sup>). However, liquidity and viscosity can evaporate together (*viscositas cum liquiditate evaporat*) if subjected to fiercer fire (*vehementiori igne*). And nevertheless, as happens with gypsum and lime, a small part resists, i.e. does not evaporate, and pulverizes (*pulverizantur*).

The content of this gloss is announced by a previous gloss, about half-way through book IV of *Meteorologica*<sup>21</sup>. Here Alfred comments on the passage in which Aristotle examines bodies that do not solidify (*incoagulabilia*) either because they do not contain water or because, even if they are composed partly by water, they are predominantly formed by air, as are, for example, viscous substances (*quid viscosum, quemadmodum gluten*)<sup>22</sup>. Alfred also points out that these latter substances solidify easily, as will be clarified in the *De mineralibus* (*unde inferius dicit "lutum viscosum in lapides verti"*)<sup>23</sup>. Yet, viscosity does not dissolve separately from liquidity. Viscosity and liquidity indeed evaporate together with intense heat (*vehementi calore*). At the end of this process, however, a certain quantity of substance remains, which does not evaporate, but is rather pulverized (*pulverizatur*)<sup>24</sup>. As we can observe, the passage quoted by Alfred in the commentary on book IV of *Meteorologica* corresponds with the one commented upon in the first gloss on the *De mineralibus*, and in these two excerpts the explanation of the way viscous substances solidify coincides.

The same concept will recur also in the last Alfredian gloss on the *De mineralibus*, which is unfortunately barely legible due to the poor condition of the manuscript<sup>25</sup>.

In the second gloss on the *De mineralibus* the *incipit* of the text represents an outspoken cross-reference to the previous commentary on the *Meteorologica*, book first, chapter two: « Sicut enim in primo capitulo secundi libri dicitur, vapor grossus calidus acque admixtus facit eam salsam ». Alfred does not comment on the petrification of viscous substances, but rather of predominantly watery ones,

<sup>20</sup> ARISTOTELES, *Meteorologica*, Δ, III, 381a23.

<sup>21</sup> OTTE, *Alfred of Sareshel's Commentary on the Metheora* cit., p. 70.

<sup>22</sup> ARISTOTELES, *Meteorologica*, ed. RUBINO, p. 26, 429-431: « *incoagulabilia uero quaecumque non habent humorem aquosum, neque aque sunt [...] quaecumque aqua participant [...] si quid uiscosum, quemadmodum gluten* ».

<sup>23</sup> OTTE, *Alfred of Sareshel's Commentary on the Metheora* cit., p. 70.

<sup>24</sup> *Ibid.*

<sup>25</sup> *Infra* Glossa IX, pp. 11-12.



which solidify due to the preponderance of the earthy element. As in the case of salt, the cause of solidification is the thick, warm and earthy (i.e. dry) element, mixed with water vapour (*vapor grossus calidus aque admixtus [...] terreus*). This process consists in the removal of the moist, which on one side dissolves due to the inner or external warmth of the body, and on the other coagulates with the earthy element. In the same way, stones are formed through the solidification of watery substances, but with an important difference: salt is porous and, since it comes from warm, dry vapour, it can be liquefied by heat; solid stones, instead, are produced by cold vapour, mixed with water, and therefore they cannot liquefy with heat.

In fact, Alfred already dealt with «*vaporem grossum terreum calidum siccum*»<sup>26</sup> at the beginning of his commentary on book II of *Meteorologica*, where he studies, in particular, the formation, nature and salinity of the sea<sup>27</sup>. He explains this process in three ways: a) as a result of the continuous movement of the sun above the sea; b) as a result of warm, dry vapour (*vapor calidus siccus*); and c) as a result of the prolonged positioning of the sun in the same place. Regarding the second point, Alfred observes: just as the salina transform (*vertunt*) vapour into salt (*vaporem grossum terreum calidum [...] in salem*) through fire, sun or the warmth of any other agent able to eliminate the liquid component of a body (*aliter quolibet modo liquiditate eiecta*), so the sea transforms a river into salty water through its own salinity, whenever it flows into the sea. The same phenomenon takes place in springs and wells that are near the sea, whose water becomes salty<sup>28</sup>.

As can be seen, these cross-references have a systematic correspondence to the commentary on the *Meteorologica*. In sum, in the glosses on the *De mineralibus* Alfred cites parts of the previous commentary on the four books of Aristotle's *Meteorologica*, at times indicating both book and chapter, and always implying the title and author of the work. Alfred evidently considers the commentary on the *De mineralibus* to be the last part of a more extensive work: the commentary on the *Liber Meteororum*.

<sup>26</sup> OTTE, *Alfred of Sareshel's Commentary on the Metheora* cit., p. 46.

<sup>27</sup> ARISTOTELES, *Meteorologica*, B, I, 353a32-35.

<sup>28</sup> OTTE, *Alfred of Sareshel's Commentary on the Metheora* cit., pp. 45-46.



GLOSSAE SUPER *DE MINERALIBUS*

The transcription of the glosses has been conducted according to the manuscript Oxford, Bodleian Selden supra 24, ff. 113r-114r. Also reported are the fragments preserved in the manuscripts Leipzig, University Library, 1392, ff. 187r-189v (= L), and Vatican, Urb. lat. 206, ff. 253v-256v (= U), as well as some passages taken from Adam of Bockenfield's commentary on *Liber metheororum*, Roma, S. Isidoro I/10, ff. 159ra-161rb (= A), which can help verify and improve the Bodleian text.

f. 113r

Glossa I. *viscosum* [a note on conglutination as a result of from viscosity, which is one of the two ways to generate a mineral from mud]

A luto igitur viscoso primum liquiditate per caliditatem eiecta sola remanet viscositas cum arrido conglutinata, que, quia mixta sunt dominante arrido, duritiam concipiunt fitque lapis. Conglutinantur enim arrida cum visco naturaliter estque natura ad finem fortissima. Unde et hee proprietates in ipso paulatim procedunt ad ultimum, excepto quod in quibusdam lapidibus liquiditas ita viscositati permixta est, quod obtesi ab ea separari non possit. Unde et vehementiori igne viscositas cum liquiditate evaporat, nisi quantum ad debilem sufficit coherentiam, ut in calce et gipso et similibus, ideoque pulverizantur. In aliis vero tota expirat, unde et ultima caliditate ignito arrido liquatur viscositas.

Glossa II. *sal* [the causes of minerals are either viscous substances or liquids; such liquids are either frozen by means of a mineral *virtus* or coagulated as an effect of the predominance of earth, as in the case of salt]

Sicut enim in primo capitulo secundi libri dicitur, vapor grossus calidus aque admixtus facit eam salsam, unde et alia eius pars in quolibet loco relicta vel sole siccatur vel frigore. Solius enim humidi privatio facit. Predictus enim vapor valde grossus et terreus et calidus est. Pars ergo humiditatis calore cogente expirat, pars cum terrestri substantia vaporis coagulatur. Et hoc coagulatum est sal. Calor vero vel extrinsecus est, ut sol ignis, vel intrinsecus, ab ipso scilicet vapore qui frigiditate compressus partem humiditatis educte pars, ut dictum est, coagulata, fitque a frigiditate, cum parva fuerit aqueitas. Sal vero, pro qualitate tam vaporis quam aque, diversis qualitatibus in fieri. A vapore ergo calidus, a terra siccus. Hec

5 mixta sunt [sub. : lapides] 6 fitque ex corr. 7 in ipso [scil. visco] 10 sufficit] sufficere?  
4-12 A luto ... viscositas L f. 187r (without mention of the author): quia lutum unctuosum liquiditate per calorem solis eiecta cum arido conglutinatur et tandem in terram lapidis convertitur; A f. 160ra: dicitur av' quod a luto unctuosum liquiditate educta se calorem solis per duriciem et fit lapis etc. 18 privatio [coagulare?] 23 tam s. l. 24 in fieri [inficitur?]

2 viscosum: RUBINO, *Il De mineralibus*, p. 35, 8. 13 sal: RUBINO, *Il De mineralibus*, p. 36, 20. 16 Sicut ... libri: OTTE, *Alfred of Sareshill's Commentary on the Metheora*, pp. 45-46. 17 eam: RUBINO, *Il De mineralibus*, p. 36, 18-19: « substantia in qua vincit aqua ».

- 25 aque mixta ipsam in terram convertunt, fiunt quoque ex aqua lapides ad salis quodammodo similitudinem, excepto quod vapor aque mixtus frigidus dominio siccitatis aquam coagulat, et ideo calor illas fere non solvit, quia frigore tantum coagulate non sunt. Ceterum ex aqua nitent, tinguntur ex vaporibus, ab utrisque varias proprietates accipiunt, suntque lenes et vehementer compacte ex vapore  
30 frigido sicco. Sal vero asperum porosum ex vapore calido sicco.

f. 113v

Glossa III. *lac virginis estque eius* [reference to a work entitled *Liber de XII aquis*]

qualiter autem et ex quibus lac virginis et cetera coagulantia componantur, in libro de duodecim aquis docetur.

- 35 Glossa IV. *quedam animalia vertuntur in lapides* [petrification of fish, coral, ebony]

Ut piscis quidam, qui cum extrahitur a mari, statim fit lapis, caloris, nisi quantum ad exilem animatione<m> sufficit expers, qui calido equoris vapore conservatur, quo per tactum aeris amisso simul cum inanitione lapidescit. Eodem modo coctum ovi alibumen calore solidatur in vitello eiecta liquiditate per decoctionem.

- 40 Similiter quoque corallus fit lapis, ebenus quoque fere lapidescit, unde et ustionem non facilem recipit. Parum enim in hiis est aer, nullus ignis, aqua et terra valde compacta.

30 Glossa II.bis « de spatio transmutationis illius » L f. 187r: Al. utrum per triginta tres annos hoc sit non refert, cum per plus duriores per minus molliores fiant; A f. 160ra: dicit Av. quod non refert utrum hoc fiat per xxx3 annos, aut non, cum per plus duriores fiant per minus autem molliores. 33-34 qualiter ... docetur U f. 253v and L f. 187r: Alf. lac virginis est valde densum et valde terrestris nature, qualiter autem (>U) et ex quibus fiat et cetera coagulata fiant (fiunt U), in libris de XII aquis dicitur (U: dicitur i. l. d. XII a.); A f. 160ra: utuntur quidam lacte virginis de qua dicit Av. quod lac virginis est densum et multum terrestris nature: qualiter autem et ex quibus fiant et etiam cetera coagulata fiant, in libro de XII aquis dicitur, ut iste dicit. Cf. *De duodecim aquis (Liber duodecim aquarum)*. Inc.: « Libelli huius aquarum series duodecim splendet capitulis ». Cf. L. THORNDIKE, P. KIBRE, *A catalogue of incipits of medieval scientific writings in Latin by Lynn Thorndike and Pearl Kibre*, The Medieval Academy of America, London 1963, col. 817; L. THORNDIKE, *A History of Magic and Experimental Science*, 8 vols., Columbia University Press, New York 1923-1958, vol. III, p. 650; *Catalogo di manoscritti filosofici nelle biblioteche italiane*, vol. II, Firenze 1980-2003 (Corpus philosophorum Medii Aevi. Subsidia 1-9, 11-12, 14), p. 189. Mss.: Cambridge, University Library, Add. 4087, ff. 130v-132r; Paris, Bibliothèque Nationale de France, lat. 6514; Paris, Bibliothèque Nationale de France, lat. 7156; Savignano sul Rubicone (Forlì-Cesena), Biblioteca della Rubiconia Accademia dei Filopatridi, 44, ff. 137r-139r. 36 caloris nisi L: et est viscosissime (U viscosae) substantie caloris expers nisi tanti (quanti L) 37 animatione<m>: anima et rationem L expers qui: a LU equoris vapore: v. e. L inanitione: animatione U

32 lac ... eius: RUBINO, *Il De mineralibus*, p. 36, 26. 35 quedam ... lapides: RUBINO, *Il De mineralibus*, p. 36, 31.

Glossa V. *discontinuantur subito virtute quadam que exit a terra in hora terremotus* [the vapour deriving from an earthquake as principle of mineral formation]

Hoc fit ad similitudinem generationis metallorum, que vaporaliter usque 45  
ad speram igneam ascendunt. Vapor enim in inferioribus terre agitur,  
vehementer ignitur, et exiens ea que cohagulationi apta sunt coagulat ut in  
proximo determinabile. Quod si hic singula corpora coagulat, vis mineralis est,  
que suo subiecto ab alio vel aliquibus componentium dicitur, vel ex proportionem  
commixtionis, que ut innumerabiles sunt, sic omnes ratione et oratione persequi 50  
nihil agentis et frustra laborantis est.

Glossa VI. *Estque locus in Arabia* [predominance of active leading principle]

Ex solis adlatione vel ad vaporem aliquem qualicumque dispositione, ut apparet  
in eclipsi solis. Tunc enim omnia corpora quodammodo aerea tinguntur, similiter  
quodque stelle in ortu, aut corpora lucida in fundo aque. 55

Glossa VII. *Panis quoque prope Caracem* [description of the petrification of bread]

exspiravit enim liquiditas et dissoluta est viscositas consequenter coagulata ex  
frigore.

Glossa VIII. *Sepe etiam fiunt lapides ex igne cum extinguitur* [petrification after  
burning] 60

Fit lapis «ex igne, cum extinguitur», id est amoto igne a materia viscosa.  
coagulatur, quod ipsum [tempore?] vero sic. Hic ignem accipit sicut est compositi,  
nisi dicas tres esse speciem ignis, carbonem scilicet, lucem et flammam.

Glossa IX. *Cecidit quoque*

In horum compactione corporum duplici processu naturam equiparat violentia. 65  
Vel enim metalli ipsius materiam ad elevatissimam aeris superficiem ultima  
caloris extollet [...] vaporalem.

Vel vaporem [non?] ad metalli naturam preparatum et [...]bet] hec pari caliditatis  
intemperantia obtesi constrictum, quod natura sibi derelicta per multam temporis  
quantitatem efficeret [quod affet...] vapor in eam, et quod dissolvit calor igneus 70  
viscositas patiens.

45 metallorum *corr. ex metallarum* 57 viscositas *corr. ex discositas* 71 viscositas *ex corr.*

43 discontinuantur ... terremotus : RUBINO, *Il De mineralibus*, p. 36, 32-33. 50-51 que ... est :  
PLATO, *Tim.* 40 d, Waszink p. 34, 9-10. 52 Estque ... Arabia : RUBINO, *Il De mineralibus*, p. 37, 40.  
56 Panis ... Caracem : RUBINO, *Il De mineralibus*, p. 37, 41. 59 Sepe ... extinguitur : RUBINO, *Il De*  
*mineralibus*, p. 37, 43-44. 64 Cecidit quoque : RUBINO, *Il De mineralibus*, p. 37, 49.

[Vel] descendit confluxus partium efficien[...] ipse dicit compactum fuisse [...] et particularis «ad quantitatem granorum milii magnis» que in vapore materialiter elevabantur, digerebantur a calore, dissolvebantur [...] ex similitudine  
 75 de<s>cendebat, ex compactione. Sic ferrum, sic es et cetera metalla. Quod autem rotundum de<s>cendit ferrum dissoluto et [...ma via] fecere.

Quod autem es similitudine sive «sagittis hamatis» in eam est compactu[m] et adustio, unde et de<s>cendendo [...] non liquatur. Viscositas enim cum liquiditate inmoderato caloris excessu expirat, quod et ipse asserit dicens [lique]fieri non  
 80 posse, sed pulverizari .

Quod autem fere «infabricabile erat» ferrum, ultima efficit durities a validissima [...]concepta.

Quod tamen «enses optimi», optime digesta fecit materia corpora, qualitas lapidea eadem dicta «cum corruscationibus» quandoque descendunt [...].

75 compactione] s. l. add. coagulabantur ex frigore 81 fere s. l.

## ABSTRACT

*The Commentary of Alfred of Shareshill on the Pseudo-Aristotelian De mineralibus*

Alfred of Shareshill was a leading figure in the English intellectual culture of the 12th century. He is the author of two translations, one treatise and three commentaries. One of these works is a commentary on the Avicennian *De mineralibus* and represents the last part of the more extensive commentary on Aristotle's *Meteorologica*, as evidenced in the manuscript Oxford, Bodleian Library, Selden supra 24 (ff. 113r-114v). The glosses that constitute this commentary were identified by James K. Otte in 1993, but they still remain unedited.

For the first time, this contribution offers an edition of the Alfredian glosses on *De mineralibus*, which represent, together with the commented text (*De mineralibus*), an important step in the scientific study of mineralogy in the Middle Ages. The main subject of the commentary is, in fact, the generation of minerals through the process of solidification, which in turn is due to the effects of heat and cold. The analysis is carried out in a highly technical and complex language.

With the edition of the glosses on the *De mineralibus*, Alfred of Shareshill's entire legacy is now available to the public.

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