Adelard of Bath, Conversations with his Nephew  
On the Same and the Different, Questions on Natural Science, and On Birds

This book consists of editions and translations of the three known texts in which Adelard of Bath (ca. 1080–ca. 1152) addresses his 'nephew': an exhortation to the study of the liberal arts which constitute 'philosophy' (On the Same and the Different), a dialogue on the nature of things in which rational causes are sought (Questions on Natural Science), and a discussion concerning the upbringing and medication of hawks (On Birds). Adelard uses an urbane and lively style, and laces his texts with jokes, puns, and subtle echoes of classical Latin authors. The context is the Court schools of Norman bishops and dukes, and in particular, the education of King Henry II, with which Adelard seems to have been involved. A preface provides the results of the most recent research on the life and works of Adelard of Bath, and an index guides the reader through the diversity of the subject-matter in the texts.

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A scholar teaching a student, with four hawks on a perch above. The opening illustration to the ‘Aviculaires des oisius de proie’, an Anglo-Norman compilation of falconry based mainly on Adelard’s De avibus tractatus.
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2. The geometrical figures in De eodem et diverso. MS Paris, Bibliothèque nationale, 2389, fols 89v–90r. Reproduced with permission.
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For Brian Lawn

senex prestigiosus
Introduction

I Adelard of Bath’s Life and Works

At the beginning of his Questions naturales Adelard says that a nephew of his urged him to reveal ‘something new from the studies of the Arabs’. It is novelty and inventiveness that characterize the works of Adelard of Bath (ca. 1080–ca. 1152), the twelfth-century English philosophus and translator of Arabic texts into Latin. And of all these works, those that feature his ‘nephew’, either as a silent auditor or as a spirited discussant, are the most finely wrought and the most entertaining and instructive. It is these works that are edited and translated in this volume.

In the Middle Ages Adelard was best known for his rediscovery and teaching of geometry. This well-deserved reputation rested on the fact that he made the first full translation of Euclid’s Elements in the West – a translation of an Arabic version – and inaugurated the process of interpreting the text for a Western audience. The Elements were the opening item in an Arabic programme of study which culminated in mathematical astronomy and practical astrology, and Adelard also translated several texts relevant to this programme: the astronomical tables of al-Khwārizmī, the Abbreviation of the Introduction to Astrology of Abū Ma’shar, the Centiloquium (astrological apopthegms) attributed to Ptolemy, and the Book of Talismans (Liber prestigiorum Thebidis secundum Hermetem et Ptholomewm) of Thābit ibn Qurra. These literal translations provided him with material for teaching the quadrivium (the mathematical sciences) as a whole, and evidence of this teaching is shown in his original works on the abacus (Regula abaci) and the astrolabe (De opere astrologpus); this includes a summary of Ptolemaic

1 QN. Prologue: ‘Nepos quidam meus . . . aliquid Arabicorum studiosorum novum me proponere exhortatus est.’
2 See Clagett, ‘Medieval Latin Translations’ and Burnett, ‘Latin and Arabic Influences’.
3 For these works, their manuscripts and editions, see Burnett (ed.), Adelard of Bath: An English Scientist and Arabist of the Early Twelfth Century and Bibliography below.
astronomy), and glosses to Boethius' *Arithmetic* and *Music*. The *Regula abaci* is addressed to a certain 'H.', the *De opere astrolapsum* to 'Henry, grandson of the King'; in turn, a certain 'H. Ocreatus' addresses a work on doing arithmetic 'the Saracen way' to 'his master Adelard'.

Besides these works on mathematics, however, Adelard wrote three texts which have the common feature of involving the *persona* of a nephew (*nepos*): the *De eodem et diverso* ('On the Same and the Different'; *DED*), the *Questiones naturales* ('Questions on Natural Science'; *QN*), and the *De avibus tractatus* ('Treatise on Birds'; *DAT*). These three works form a kind of literary triptych in which Adelard appears to be deliberately experimenting with different genres, and expressing his allegiance to different cultural traditions. In the first, Adelard takes up the style of the 'protrepticus' (i.e., exhortation to the study of philosophy) in the Greek tradition of Aristotle, Cicero and Boethius. His avowed sources are Greek, and he gives prominence to his experiences in Sicily and Magna Graecia, i.e., the Greek-speaking part of Italy. In the second, Adelard adopts the genre of the 'questions on nature'. This also was an ancient form, with a pedigree going back to the *Problematum* of the Lyceum and extending through the *Problematum* attributed to Alexander of Aphrodisias to the 'natural questions' associated especially with the medical school of Salerno. This family, however, also had a distinguished Arabic branch, and Adelard chooses to present his *QN* as a forum for Arabic learning and to refer in it to his experiences in the Principality of Antioch. For the third text, finally, Adelard takes over the genre of medical texts, addressing diseases arranged *a capite ad calcem* ('from head to toe'), and claims, this time, that his knowledge comes from an English source ('the books of King Harold'). This demarcation of three cultural traditions is a literary device of considerable sophistication. It remains to be seen to what extent it conforms to Adelard’s true sources, and genuine experiences.

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4 See Burnett, ‘Adelard, Music and the Quadrivium’.
6 Burnett, *Algorismi vel helcip*; this article includes an edition of Ocreatus' *Helcop Sarracencium* ('Saracen calculation'), of which the prologue is headed: 'Prologus H. Ocreati in Helcop ad Aclardum Batensem magistrum suum'.
7 Cicero's *Hortensius* and its Greek model, the *Protrepticus* of Aristotle, survive only in fragments, but were the progenitors of the genre of 'exhortations to the study of philosophy'.
8 See Daiber, 'Masāʾil'. 
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Adelard’s biography can be only partially reconstructed from his own testimonies and from independent references.9 He is consistently referred to as being ‘of Bath’, and his connection with the city is assured by a self-reference in his QN (Q28, p. 150: ‘non Stoicum me set Bathoniensem dico’) and the use of Bath in practical examples in his works on the astrolabe and on talismans. The name ‘Adelhardus’ occurs four times in the cartulary of Bath Priory, twice (in a document from William II’s reign and another of 1100) as dapifer (‘steward’) to the bishop of Bath, John de Villula (1088–1122), and twice (in 1106 and 1122) among the ‘milites et ministri’ of the same bishop.10 The document of 1106 describes Adelardus as ‘ilius Fastradi’; Fastrad was one of the principal tenants of Giso, John of Villula’s predecessor. On the presumption that this Adelardus is Adelard of Bath the scholar, his birth must be placed in 1080 or before, but it is perhaps surprising that Adelard should have reached the high position of dapifer to the bishop by 1100, and the four Adelardus mentioned in the Bath cartulary may not be the same person. Two further charters mention an Adelard from Bath: ‘Adelard(us) de Bada’ appears in the Pipe Roll of 1130 among tenants in Wiltshire exempted from a murder fine,11 and ‘Adelard’ de Bath’nian’ was a witness to a charter of King Stephen drawn up in favour of the Abbey of Bury St Edmunds between 1135 and 1139.12 That Adelard was teaching at Bath itself is suggested by the fact that his pupil Ocreatus probably belonged to the most prominent family in the city at that period – the Husseys.13

Most of the remaining details concerning his biography must be inferred from his writings, and due allowance must be made for the


10 W. Hunt, Two Chartularies of the Priory of St Peter at Bath, Somerset Record Society, 7, 1893, I, nos 34, 41, 53, 54.


13 See Burnett, Ocreatus’.
literary context of these details. Those in the DED suggest that he studied in Tours – this famous centre in the Loire valley is the setting of the work, and the place where he read music as part of his Gallica studia, met a famous, but unnamed, wise man who elucidated the science of astronomy for him, and (perhaps) played the cittern in front of a queen – and that, on travelling from Salerno, he met a Greek philosopher in ‘Grecia Maior’ who was an expert in medicine and the nature of things. Those in the QN state that Adelard dismissed his pupils outside Laon, in preparation for a seven-year period of travel devoted to the Arabum studia (‘the studies of the Arabs’), and mention specifically his experiences in Tarsus and during an earthquake at Mamistra (Misis, ancient Mopsuestia) in Cilicia. Both these places were in the Norman Principality of Antioch, and possible confirmation of Adelard’s visit there is provided by a reference in a fuller translation of the same Book of Talismans by Thābit ibn Qurra that Adelard had translated: the translation by John of Seville and Limia. In the preface John refers to a previous, partial, translation by an ‘Antiochene’; the reference would seem to be to Adelard’s translation.\footnote{See the prologue to Thābit ibn Qurra’s De imaginibus, ed. Burnett in ‘Magister Johannes Hispanensis et Limensis and Quṣṭā b. Lūqā’s De differentia spiritus et animae: a Portuguese Contribution to the Arts Curriculum? Mediaevalia. Textos e estudos, 7–8 (1995), pp. 221–67 (p. 253): ‘Hunc ergo librum abs ipso, Dei iuvante, quem nullus Latinorum preter quendam Antiochenum, qui quondam eius partem habuit, adeptus fuerit’. The identification of this Antiochene with Adelard was first suggested by Richard Lemay in ‘The True Place of Astrology in Medieval Science and Philosophy: Towards a Definition’, in Astrology, Science and Society, ed. P. Curry, Woodbridge, 1987, pp. 57–73 (see p. 70).}

The DED is dedicated to William, bishop of Syracuse in Sicily; his bishopric must fall between the last mention of a predecessor (1105) and the first mention of a successor (1124). The QN are dedicated in most manuscripts to Richard, bishop of Bayeux (one family of manuscripts dedicates the work to ‘presul G’ who could again be the bishop of Syracuse).\footnote{See below, p. xlvii. This ‘presul G’ could, however, also be William of Corbeil, archbishop of Canterbury. 1123–36 or Godfrey, bishop of Bath and Wells, 1123–35: see further Bliemetziard. Athelhard von Bath, pp. 78–9.} This Richard was either Richard FitzSamson, bishop from 1107 to 1133 or Richard of Kent, bishop from 1135 to 1142. The prologue also mentions a recent return to England during the reign of Henry the son of William (= Henry I, 1100–35) after a long absence.\footnote{For attempts at a more precise dating of the DED and QN see Haskins, Studies, pp. 21–22 and 26–7, Thorndike, History of Magic, II, pp. 44–9, Bliemetzrieder, Athelhard von Bath, pp. 25–6 and Lawn, The Salernitan Questions, pp. 28–30. No consensus has been reached.}

This information suggests that Adelard grew up in Bath just at the
time when Bishop John de Villula had chosen to move the seat of his
bishopric from Wells to Bath, where he restored the Roman spa and,
himself a doctor, attracted doctors and scholars to the city.17 John
may have encouraged Adelard both to go to Salerno and to study in
Tours, his natale solum. The ‘wise man of Tours’, whose interest in
astronomy inspired Adelard, is not identifiable, but Adelard’s literary
style and interests are remarkably close to another alumnus of Tours,
Hildebert of Lavardin, who returned to Tours as bishop in 1125. On
the other hand, the dialectical arguments he employs in his DED are
in the tradition of Beringerius of Tours (d. 1088) and Roscelin
of Compiègne who was at St Martin de Tours between 1100 and 1110
and perhaps for longer.18 Adelard was with his ‘nephew’ in Tours,
applying himself to Gallica studia which included music and astron-
omy. In the QN Adelard takes his nephew and other students to Laon,
where his nephew promises to pursue Gallica studia while Adelard
departs elsewhere to devote himself to Arabum studia. At the turn of
the twelfth century, the school of Laon, under the direction of Anselm,
was a favoured place of study for the administrators of the English
Court. In Laon Adelard was probably doing the same as his con-
temporary William of Corbeil, the future archbishop of Canterbury,
who was teaching the sons of Ranulf Lambard, Henry I’s judiciary,
whilst following Anselm’s lectures.19 Moreover, Laon also had a
reputation for the study of the quadrivium, and the theologian and
mathematician Ralph. Anselm’s brother and successor as head of the
school, would have been teaching there at the time of Adelard’s
visit.20

So far, Adelard’s biography has followed that of the typical bright
young scholar, aspiring to a career in the Church or royal administra-

194–5. For evidence of Bishop John’s erecting the King’s bath and other buildings see
B. Cunliffe and P. Davenport, The Temple of Sulis Minerva at Bath, I.1, Oxford University
Committee for Archaeology, Monograph no. 7, 1985, pp. 79–82 and 186–8.
18 For the intellectual tradition at Tours in the eleventh to twelfth centuries see Peter
Dronke’s introduction to his edition of Bernardus Silvestris, Cosmographia, and Mews,
’Nominalism and Theology before Abelard’.
19 T. A. Archer, ‘Ranulf Flambard and his Sons’, English Historical Review, 2, 1887, pp.
103–112, discussing the evidence of the Liber de miraculis sanctae Mariæ Laudunensis, 2.
6, in PL, 161, col. 977B–C. The two nephews of Roger, bishop of Salisbury, the
successor of Ranulf as royal justiciary, also went to Laon.
20 Ralph (d. 1133) and his brother Anselm (a pupil of Anselm of Canterbury; d. 1117) had
been running the cathedral school since about 1080. In their joint work on biblical
exegesis they were accompanied by William of Champeaux (d. 1122), a student of
Anselm and later a teacher of Abelard, and perhaps also of Adelard (see pp. 52–3
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tion. At this point, however, Adelard’s life takes a novel turn: he visits southern Italy and Sicily, and may well have spent some time in the entourage of William, bishop of Syracuse, whom he praises in particular for his skills in the mathematical arts.  

21 Syracuse, the city of Archimedes, was ruled by the Norman count, Tancred, and another Norman, also called Tancred and probably a cousin, was the prince of Antioch. Adelard’s next port of call.  

22 Adelard was presumably caught up in the enthusiasm for visiting the Middle East which followed the success of the First Crusade in 1098. The earthquake he experienced in Mamiesta may have been the one that affected the area in 1114.  

23 On his return to England, Adelard probably settled in Bath. This return occurred well within the reign of Henry I, for, in 1122, he attested a charter in the city. It has been suggested that he also served the king, perhaps as an adviser on the running of the Exchequer.  

24 It was during this period that he wrote his version of the tables of al-Khwārizmī, which have a starting-point (radix) of 1126 (there are no dates connected with Adelard’s other translations from the Arabic, but they may have been written around the same time).

What happened after the death of Henry I in 1135 and during the period of civil war between Henry’s daughter, the Empress Matilda, and King Stephen is less clear. Doubt has been cast on the reading ‘Adelard de Bathnian’ in the charter of King Stephen from the late 1130s, and the horoscopes drawn up by a partisan of the king in 1150 and 1151 are not necessarily the work of Adelard.  

25 A different allegiance is suggested by the dedication of the De opere astrolapso to ‘Henricus, nepos regis’. For this can hardly be anyone other than the future Henry II, grandson of Henry I, especially since Adelard goes on to mention the dedicatee’s reaching the ‘age of discretion’ and refers to the importance of rulers being philosophers. Henry Plantagenet, son of the Empress Matilda and of Geoffrey, Count of Anjou and (since

21 *DED*, p. 2: ‘omnia mathematicarum artium eruditissime’.


24 This is the argument of R. L. Poole (*The Exchequer in the Twelfth Century*, Oxford, 1912, pp. 56–7) who suggests that his exemption from a murder fine in the *Pipe Roll* 31 *Henry I* implies that he was in the king’s service.

25 See n. 12 above.

26 These horoscopes are discussed in North, ‘Some Norman Horoscopes’. North makes a case for Adelard as the astrologer, but the claims of Robert of Chester, who wrote astronomical texts in London, Stephen’s capital, in 1147 and 1150, are perhaps stronger.
1144) Duke of Normandy, was formally declared to have come of age by his father on his return from a triumphal tour of England, early in 1150. At the same time he was invested with the duchy of Normandy and his succession to the English throne looked probable. Hence the appropriateness of addressing him as ‘grandson of the king’.\(^{27}\) The *De opere astrolapsum* accompanies in the manuscripts another text which was intended for the sons of Geoffrey, Duke of Normandy: the *Dragmaticon* of William of Conches. William is the earliest scholar to know Adelard’s QN, which he uses extensively, without acknowledgment, in his *Dragmaticon*.\(^{28}\) The young Duke Henry provides the link between Adelard and William. Adelard’s presence in Normandy is also suggested by the fact that the earliest copies of his translations of the works of Thābit ibn Qurra and Abū Ma’shar were in a manuscript from the Benedictine abbey of Mont St-Michel.\(^{29}\) It was probably in Normandy, too, that he dedicated the QN to Richard, bishop of Bayeux.\(^{30}\) Whether he returned to England after Henry’s accession to the throne in 1154 is unknown; the *De opere astrolapsum* is the last testimony to his existence.

It appears that Adelard never held an ecclesiastical post. As a layman he was free to travel widely, and it is perhaps rash to try to confine him to the few places that are directly mentioned by him, or where he is mentioned in external sources. Aside from the parallels between his work and that of William of Conches, who had been nurtured at Chartres, there are other factors that suggest that Adelard had some connections with the cathedral school there. His version of the tables of al-Khwārizmī and the *commentum*-version of his translation of Euclid’s *Elements* were known in the city by the

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\(^{27}\) These arguments were first set out by North, ‘Some Norman Horoscopes’, pp. 155–61.


\(^{29}\) Now Avranches, Bibliothèque municipale, 235.

\(^{30}\) It is likely that this was Richard FitzSimon, since William of Conches already appears to know some of the subject-matter of the QN in his *Philosophia* (written in the 1120s; see p. xxii below); this Richard was the son of Simon, bishop of Worcester, and therefore familiar in the area of Adelard’s earlier activity; he is known to have had intellectual interests. However, it is possible that Adelard dedicated a composition that he had started to work on many years previously, to the second bishop called Richard; for this Richard of Kent was the son of the Duke of Gloucester, the Empress Matilda’s principal supporter.
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1140s, since they were included in the Heptateuchon (written in the early 1140s) of Thierry, the chancellor of Chartres.31 On the other hand, Adelard’s interests and scientific knowledge correspond to those of scholars associated with the cathedrals of Hereford and Worcester. The earliest copy of his tables of al-Khwārizmī is in a manuscript written in the cathedral priory of Worcester before 1140, where it accompanies a work on the Church calendar (computus) by Robert, bishop of Hereford (1079–95) and two astronomical texts written by Walcher, the prior of Great Malvern Abbey (just outside Worcester), who died in 1135. One of the latter texts reports the opinions on the lunar nodes of Petrus Alfonsi, the converted Jew from Huesca in Aragon, who had also made a version of the tables of al-Khwārizmī, apparently from the same Arabic manuscript as that used by Adelard.32

Finally, it may be significant that the only medieval reference to the existence of Adelard’s DED is in a catalogue of the books of Waltham Abbey of ca. 1200, where a ‘summa’ of Pseudo-Quintilian’s Declamationes maiores is also attributed to Adelard.33 This summa is probably the dialogue-version of the Declamationes, edited by Lehnert under the title ‘Excerpta Parisina’,34 which, although anonymous in the manuscripts, has some of the hallmarks of a work by Adelard.35 The Excerpta Parisina, the QN and DED occur together in the manuscript which gives what appears to be Adelard’s authorial revision of the text of the Questions.36 This manuscript, described below as ‘L/P’, is

31 For the evidence that the Heptateuchon was written at Chartres see P. Stirmann, ‘Où ont été fabriqués les livres de la glose ordinaire dans la première moitié du xiiie siècle?’ in Le xiiie siècle: mutations et renouveau en France dans la première moitié du xiiie siècle, ed. F. Gasparri, Paris, 1994, pp. 257–302 (see pp. 275–6). A second copy of the tables of al-Khwārizmī once existed in Chartres, Bibliothèque municipale, 214: this appears to have been the manuscript from which the text of the Heptateuchon was copied. For the commentum-version of Euclid’s Elements, which I believe is a direct result of Adelard’s teaching, see Burnett, ‘Latin and Arabic Influences’.


35 This question is more fully explored in Burnett and Ronca, ‘Transmission of Adelard’s Questions naturales’.

36 See below, p. xiv.
written in an English hand of the late twelfth century which resembles hands in the few surviving Waltham manuscripts of the time.\textsuperscript{37} The privileged position of Adelard’s works at Waltham requires some explanation.

The evidence suggests, then, that Adelard spent his life as a tutor to the sons of the nobility and perhaps, even, as a \textit{philosophus} in the court.\textsuperscript{38} His subject was the whole range of the secular sciences, which he would have described as \textit{philosophia}. His original writings demonstrate that he not only promoted the seven liberal arts which formed the backbone of the traditional Latin curriculum of \textit{philosophia}, but was also aware of a more widely encompassing range for the subject: for, while the topic of the \textit{DED} is this traditional curriculum (with a particular emphasis on logic), the \textit{QN} deal with the new subject of physics or natural science, and end with the promise of a book which could only be described as being on metaphysics.\textsuperscript{39} Whether Adelard owed this new conception of philosophy at all to the \textit{Arabum studia} remains to be investigated.

\textbf{II The Texts}

\textit{De eodem et diverso}

The \textit{DED} takes the form of a dramatic dialogue between Philocosmia, who advocates worldly pleasures, and Philosophy, whose defence of scholarship leads into a summary of the contents of each of the seven liberal arts.\textsuperscript{40} Philocosmia’s claim that philosophers cannot be trusted because they never agree with each other leads Philosophy to attempt to prove the compatibility of the philosophies of Plato and Aristotle. This gives Adelard the opportunity to advance a well-argued theory of knowledge, which was the first element of Adelard’s work to attract the attention of modern scholars.\textsuperscript{41} The contrast between \textit{res}, the perceptible realities with which Philocosmia deals, and \textit{verba}, the mental concepts of Philosophy, runs through the whole work.

Adelard’s principal classical model is Boethius’ \textit{Consolation of Philo-}

\begin{itemize}
  \item \textsuperscript{37} E.g., London, British Library, Add. 34749.
  \item \textsuperscript{38} For the role of the professional \textit{philosophus} in the twelfth and thirteenth centuries see Burnett, ‘Master Theodore’, pp. 248–52.
  \item \textsuperscript{39} See pp. 226–7 below.
  \item \textsuperscript{41} Hauréau, \textit{Histoire de la philosophie scolastique}, chapter 14, pp. 345–61.
\end{itemize}
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Sophy, which provides him with much of his vocabulary and phraseology, with his broader philosophical concepts, and with the form of the work, in which arguments in prose are concluded with passages of verse. The sections on the liberal arts, on the other hand, reflect the textbooks on each of these arts which were currently being used in Adelard’s circle. Each section is divided into two parts: first there is a description of the allegorical figure representing the art, in which the range and importance of that art is indicated: then there is a summary of the doctrines of the art, put into the mouth of the allegorical figure or of the man she has chosen to be its founder or foremost exponent. These personae are reminiscent not only of the allegorical figures in Martianus Capella’s Marriage of Mercury and Philology but also of the allegorical women and practical men of the medieval iconography of the arts, and in particular of the sculptures on the Portail Royal of Chartres Cathedral. The practical men (not always named by Adelard), are presumably Donatus for grammar, Cicero and Aristotle for rhetoric, Aristotle for logic, Pythagoras for music and presumably Euclid for geometry.

In the field of the trivium Adelard relies on Cicero’s De inventione and the logical works of Boethius, of which he refers specifically to the Introductio ad syllogismos categoricos. In his account of the quadrivium, Adelard is more expansive. For arithmetic he summarizes definitions in Boethius’ Arithmetic and arranges the material in a symmetrical way, so that the ‘beautiful diagram of Nicomachus’ for the even numbers matches ‘the sieve of Eratosthenes’ for the odd numbers. The doctrine in the section on music is also dependent on Boethius – this time his Music –, but Adelard adds items from his own experience and that of the English. In geometry he does not yet
show himself to be familiar with Euclid’s *Elements*, but rather depends on a text of the tradition of the Roman land-surveyors (*agrimensores*): the work known in modern scholarship as the *Geometria incerti auctoris*, which was already in existence in the early eleventh century.\(^{50}\) In the case of astronomy, Adelard includes mention of its usefulness in prediction, but forbears from discussing it at length because of the difficulty of its subject-matter.

The classical sources in the *DED* are interpreted in the light of the teaching that Adelard had received, presumably mainly at Tours, but possibly also in Laon. It is these contemporary sources that can be glimpsed in the way Adelard attempts to show how the epistemology of Plato and Aristotle can be reconciled. For he propounds a theory of universals which is very similar to what was later called the ‘indifference’ theory: i.e., that the terms (*voces*) ‘individual’, ‘species’ and ‘genus’ can be applied to the one thing (*res*) and differ only according to the different levels at which that thing is considered. Adelard’s intention is to rescue such voces, as reaching ‘the causes and beginnings (*initia*) of the causes of things’, in the face of an Epicurean attitude in which only the sensible ‘things’ (*res*) are regarded as of any relevance.

The status of *res* and *voces* was very much the concern of the early ‘vocales’ (later known as ‘nominalists’) of which Roscelin was one of the most important. Adelard’s arguments are especially close to those of the Pseudo-Rhabanus’ commentary on the *Isagogae* of Porphyry and of an anonymous commentary on the same text in MS Munich. Bayerische Staatsbibliothek. Clm 14458.\(^{51}\) In Adelard’s summary of rhetoric there are parallels with theories of William of Champeaux, who may have been in Laon when Adelard was there. Adelard seems also to have been influenced by the anonymous *Glosule ad Priscianum*. This late eleventh-century work was present in a manuscript in Chartres; it has recently been suggested that it was written by John of Rheims, the teacher of Roscelin.\(^{52}\)

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50 See L. Toneatto, *Codices artis mensoriae*, 3 vols, Spoletto, 1995, pp. 1015–1110. Chapters from this work are also found in the Mont-St-Michel manuscript that included the earliest copies of Adelard’s translations of Arabic texts: see n. 29 above. For other sources and parallels to the doctrine in this section see Burnett, ‘Latin and Arabic Influences’.


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The DED concludes with the advocacy of travelling to seek for knowledge in other cultures, and a metaphor from human physiology. This nicely prepares the way for the QN, one of whose questions (Q49) is included in the anecdote, concerning a journey from Salerno through Magna Graecia, with which Adelard ends the DED.

Questiones naturales

The QN is the most substantial of the three works included in this volume.\(^{53}\) It consists of a set of seventy-six questions arranged in three parts of almost equal length: on plants and brute animals (Q1–14), on man (Q15–47), and on earth, water, air and fire (meteorology and celestial physics) (Q48–76). Adelard has adopted the standard genre of natural questions\(^ {54}\) as a convenient framework for a literary masterpiece with his own particular stamp. The evidence for this is both the use of leitmotifs to bind the work together – in particular ratio and opinio – and the structure of the work. It develops an argument of rational causes in nature from the lowest creatures physically – i.e., from the very roots of the plants – to the heavens. Of the three parts, that on man discusses his corporeal aspects only, but both the others end with questions concerning the incorporeal soul, which are discussed more extensively than most of the other natural questions. The first part ends with the question of whether brute animals have souls: the whole work ends with the problem of whether the heavens are ensouled.

That Adelard was using a pre-existent set of natural questions is indicated by the facts that some questions are raised but not discussed because, according to the protagonists, they have been dealt with elsewhere (e.g., ‘Why do men grow grey in old age?’, ‘Why do we gulp down hot foods?’, ‘Why do some waters taste of soda?’, ‘Why are some waters hot in themselves?’, and ‘Why does the Moon suffer eclipse?’);\(^ {55}\) others are said to be answered in the wrong order (e.g.,


\(^{54}\) The whole tradition is set out expertly by Lawn, Selernitan Questions: see pp. 20–31 for a discussion of the sources and parallels to Adelard’s questions.

\(^{55}\) These questions are mentioned in Q20, Q34, Q59 and Q70 respectively.
the question of the cause of the obliquity of the ecliptic, which should precede that of the contrary movement of the planets.\textsuperscript{56} The most telling (but perplexing) reference appears only in MS L/P:\textsuperscript{57} ‘Hic deest cur in occupitio careatru oculus’ (‘Here is lacking the question on why one lacks eyes in the back of the head’). There clearly was a list of questions in which this one occurred in this position.\textsuperscript{58} The much greater correspondence between the questions addressed in William of Conches’ \textit{Philosophia} and \textit{Drigmaticon} and those of the QN, in comparison to that between their answers,\textsuperscript{59} also suggests that Adelard and William were both using a similar set of pre-existent questions.\textsuperscript{60}

Since at the end of the \textit{DED} Adelard specifically and pointedly mentions a discussion with a Greek philosopher in Magna Graecia in which one of these questions was asked, one would expect his own questions to come from the same source as the collections of Salernitan questions which were popular in the Middle Ages.\textsuperscript{61} The problem is that there is no evidence that Adelard was able to read or translate Greek, and there is no earlier Latin list of questions that is nearly as complete as Adelard’s QN.\textsuperscript{62} Nevertheless, it is probable that Adelard’s inspiration came from Southern Italy. One of the few works which Adelard quotes directly in both \textit{DED} and QN is Nemesius’ \textit{Preammon phisicon}, which also happens to be found in the earliest

\textsuperscript{56} The beginning of Q71.

\textsuperscript{57} See p. 1.52 below. For the explanation of the manuscript sigla see pp. xxiii–xlv.

\textsuperscript{58} I.e., just before Q30. Note that this question and its answer are included in one of the Hebrew versions of the QN after the equivalent to Adelard’s Q30: see Gollancz, \textit{Dodi ve-Nechdhi}, pp. 36–7. Moreover, this Hebrew translation also gives an answer to the problem of gulping hot foods, which QN passes over, allegedly because Macrobius had already provided the answer: ibid., p. 41, see pp. 162–3 below.

\textsuperscript{59} The following questions are shared by Adelard and William: Q1–7, Q18, Q20–21, Q23, Q37, Q41–2, Q51–2, Q54–7, Q59, Q63–5, Q69–72. Of these, in only Q18, Q21, Q23, Q54 and Q57 there are resemblances between the answers in Adelard and in William’s \textit{Philosophia}. By the time William writes the \textit{Drigmaticon} he clearly uses Adelard’s answers in Q1–5, Q12, Q23, Q30 and Q37.

\textsuperscript{60} Another hint at such a set of questions can be found in Baudry de Bourgueil’s poem addressed to Adela, daughter of William the Conqueror (Baldricus Burgulianus, \textit{Carmina}, ed. K. Hilbert, Heidelberg, 1979, p. 183: Poem no. 135, lines 1287–94): ‘Cur homo sit calvus, cur non sit femina calva? / Cur quoque gignatur homo, femina concipiat? / Cur homo barbatus, imberbis femina cur sit? . . .’. In Q52 the nephew refers to a question as being ‘well known’.

\textsuperscript{61} Eleven collections of these questions have been edited by Brian Lawn in \textit{The Prose Salernitan Questions}.

\textsuperscript{62} The extant earlier sets of questions in Latin available to, and apparently used by, Adelard are the \textit{Vetustissima translation} of the combined pseudo-Aristotelian and pseudo-Alexandrian \textit{Problemata}, and the short list of questions in Staurus’ \textit{Thebaid}, VI, vv. 360–4, explicitly cited by Adelard. There is no evidence that Adelard knew Seneca’s \textit{Natural Questions} or Priscianus Lydus’ \textit{Solutiones ad Chrosem}. 
manuscript of Adelard’s QN.\textsuperscript{63} The *Premnon phisicon* is a translation from Greek of Nemesius’ *On the Nature of Man*, made by Alfiano, the learned archbishop of Salerno (d. 1085), who had visited Constantinople and wrote both Latin poetry and medical texts based on Greek sources. It is conceivable that a set of Greek natural questions accompanied Alfiano’s Greek copy of Nemesius’ *On the Nature of Man*. For, when Burgundio of Pisa comes to make a second translation of the same work in 1165, he promises Frederick I Barbarossa, the dedicatee, solutions to a set of natural questions as a sequel to his translation: most of the specific examples he gives of natural questions can be found in Adelard’s QN.\textsuperscript{64} Alfiano was obviously interested in the natural-questions genre, since a work entitled ‘Alfani Salernitanensis de quibusdam questionibus medicinalibus’ was formerly in the library of Christchurch, Canterbury.\textsuperscript{65} It is possible, then, that Alfiano provided the conduit through which a Greek set of natural questions became available to Adelard.\textsuperscript{66}

As for the answers, there is, again, very little correspondence between Adelard’s QN and the extant versions of the Salernitan

\textsuperscript{63} MS G below. This manuscript includes a second, anonymous, translation of Nemesius’ chapter on the elements, edited by R. C. Dales, *An Unnoticed Translation of the Chapter De elementis from Nemesius’s De natura hominis*, *Medievalia et humanistica*. 17, 1966, pp. 3–19; since Dales’ article another manuscript of this text has been found: British Library, Add. 22719, fol. 161r–162r.

\textsuperscript{64} Ed. G. Verbeke and J. R. Moncho, Ladden. 1975, pp. 2–3: ‘Si in his vos exercitari perpenseris, et altiora Vobis transfersse curabas: de corpore caeli, de forma et motu eius et de omnibus passionibus quae sunt a caelo deorum. ut de lacteo circulo et cometics et ventis et coruscationibus et tonitruis et iride et pluvius et grandine et pruina, et cur mare salsum est et cur tot fluminibus influentibus nec augetur nec dulcoratur, et de terrae motu quater fiat’: cf. Adelard’s Q50, Q51 and Q53. G. Vuillemin-Dem and M. Rashed (‘Burgundio de Pise et ses manuscrits grecs d’Aristote: Lahr. 87.7. et Lahr. 81.18’, *Recherches de théologie et philosophie médiévales*, 64, 1997, pp. 136–98), argue persuasively that Burgundio is referring to Aristotle’s *Meteorologica*, which includes discussion of all these subjects.


\textsuperscript{66} This is also the conclusion of Lawn, *Salernitan Questions*, p. 37, n. 3 and p. 54. On pp. 24–5 Lawn points out that three of Adelard’s questions (Q12, 33 and 47) are the same as the Greek questions which occur in parts of the pseudo-Aristotelian and pseudo-Alexandrian *Problemeta* of which we have no Latin translation predating Adelard. The question allegedly posed by the Greek philosopher in *Magn Graecia* (DED and Q49) is not attested elsewhere. Although the *Problemeta* of Pseudo-Aristotle was translated into Arabic (*Problemeta physica arabica*, ed. L. S. Filius), and comparable sets of natural questions can be found in Arabic authors (e.g., in Pseudo-Apollonius, *On the Secrets of Nature*, ed. U. Weisser, *Buch über das Geheimnis der Schöpfung und die Darstellung der Natur von Pseudo-Apollonios von Tyana*, Aleppo, 1979 which includes some Pseudo-Aristotelian problems no longer extant in Greek), it seems unlikely that an Arabic set would have been Adelard’s immediate source.
questions. Nor does Adelard appear to know the medical texts and translations from Arabic of Constantine the African who had passed through Salerno on his way to Monte Cassino where he died before the end of the eleventh century. Here, too, the comparison to William of Conches is instructive, because, already in the *Philosophia*, William includes some of the Salernitan solutions, alongside quotations from Constantine the African. Some of Adelard’s answers may reflect an earlier stage in the genre of natural questions: a stage that predate the impingement of the translations of Constantine the African on Salernitan learning, and may be representative of Archbishop Alfano’s circle. However, what is striking is that most of the arguments in the solutions, and some of the questions to which Adelard gives most attention, bear no relationship at all to the natural-questions genre.

Sometimes Adelard uses a pre-existent question simply as a prop on which to hang a topic in physics that concerns him more deeply: e.g., the cooling nature of fans (Q34) leads him to investigate essential and accidental qualities; the movement of winds (Q59–61) leads to the problem of infinite movement. In regard to the soul, however, Adelard appears to introduce completely new questions. The topic of the soul is specifically excluded from the Salernitan questions in a statement near the beginning of the fullest set of those questions:

> The discussion of the soul, on the other hand, has little or no relevance to theoreticians or philosophers, since its creation and infusion belong to the divine power in such a way that human reason can have no sensual experience of its disposition and only faith can judge its worth.

Given this statement, it is not surprising that we do not find the soul discussed in any of the extant sets of *Problemata* or Salernitan questions.

On the other hand the soul was a very hot topic of discussion at the time that Adelard was writing the QN. There is a proliferation of writings amongst Latin theologians and philosophers; not only William of Conches’ works with their controversial doctrine of the *anima*

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67 The only similarities are in the answers to Q12, Q23, Q29, Q34, Q51 and Q58.
68 This is the case for William’s answers to Adelard’s Q6, Q37, Q18, and Q73.
70 Lawn (Salernitan Questions, pp. 21–3) shows how the Galenic theories as given in Constantine the African’s *Pantegni* are absent in Adelard’s work.
71 Thus Speer writes (*Die entdeckte Natur*, p. 75): ‘In dem Bestreben, die “causae rerum” zu erforschen, versichert sich Adelard der großen Themen der Physik: Materie, Bewegung, Elementenlehre und schließlich Kosmologie.’
mundi, which derived from a new interest in Plato’s Timaeus, but also Hugh of St Victor’s De unione spiritus et corporis, Isaac of Stella’s De anima, Alcher’s De anima et spiritu and other texts. The urgency of the debate was caused by the threat to orthodox Christian discourse on the salvation of an incorporeal soul through good works, from Platonic and Aristotelian conceptions of the soul on the one hand, and from medical works which discussed the activity of corporeal spirits in the body on the other. Adelard was responding to a contemporary interest, as he himself states, in the persona of his nephew:

Nephew: Now that we have discussed everything else about animals, we should tackle the last and most urgent question: ‘Do brute animals have souls?’ (p. 111 below)

If Adelard did not draw on Salernitan solutions, where did Adelard find the answers to his questions? He claims that they derive from Arabum studia. As we have seen, his nephew had asked for ‘something new from the studies of the Arabs’, and in the introduction to the questions Adelard asserts that he had undertaken to ‘scrutinize the studies of the Arabs as much as he could’, with the result that, in the QN, he was putting forward the views of the Arabs, not his own. A short way into the text, Adelard includes his well-known defence of following reason rather than authority, which he prefaces with the words: ‘I have learnt one thing from my Arab masters, with reason as guide’, and the nephew, on two occasions, pours scorn on Adelard’s addiction to the views of the ‘Saracens’. And yet, up to now, only Greek and Latin sources have been identified. A correspondence has been recognised between the answer of Q12 and a Greek pseudo-Alexandrian problem that is not known to have been translated into Latin in Adelard’s time; several of Adelard’s solutions resemble those


74 Note 1 above.

75 QN, introduction to the questions: ‘Arabum studia ego pro posse meo scrutinar.’

76 Ibid.: ‘hoc tantum vitae commodo, ne quis me ignota proferentem ex meo id sententia facere, verum Arabicorum studiorum sensa putet proponere . . . causam Arabum, non meam, agam.’

77 QN, Q6: ‘Ego enim aliud a magistri Arabicis ratione duce didici.’

78 QN, introduction to the questions: ‘cum Saracenorum sententias te sepe exponentem auditor tantum notaverim’; Q5 ‘Itane igitur illi Saraceni subtilibus te nughis illaquabat’. It is not clear whether the nephew’s use of ‘Saraceni’ rather than ‘Arabes’ has a derogatory tone.

79 This enigma is well discussed in Lawn, Salernitan Questions, pp. 21–7.

80 Ibid., pp. 24–5; the same question and answer also occur in the Salernitan Questions.
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of Nemesius’ *Premnnon phisicon* in Alfano’s translation.81 The classical Latin sources for some of the arguments include Boethius’ *Consolation of Philosophy*82 and Macrobius’ *Saturnalia*.83 There are, however, two classical works which appear to provide exactly the arguments and methodology which Adelard claims to be ‘Arabic’.

The first of these is Plato’s *Timaeus*. The nephew regards Adelard as being a faithful follower of Plato in every branch of philosophy,84 and Adelard himself characterizes Plato’s doctrines as ‘divine’.85 This statement is applied to Plato’s doctrine of vision, on which Adelard quotes a substantial passage from Calcidius’ translation of Plato’s *Timaeus*. Several further passages from the *Timaeus* are quoted under the name of ‘the Philosopher’ (Philosophus). For Adelard, the Philosopher is Plato, and he himself is one of the ‘Academics’ who follow him. After the initial statements concerning Adelard’s Arabic studies and Arabic masters, the role of rational guide is taken over by Plato.86

The other text is the *De natura deorum* of Adelard’s fellow ‘Academic’, Cicero. Adelard’s very claim (following his ‘Arabic masters’) to use rational arguments rather than those of authority recalls the argument at the beginning of Cicero’s *De natura deorum*, in which Cicero agrees to use rational arguments rather than tradition, to discuss the nature of the gods.87 That Adelard used this work is clear from his arguments for the different kinds of fire and of movements in the universe, which are taken directly from the *De natura deorum*,88 although Adelard refers them to Cicero’s authorities,

81 Ibid., pp. 22–3, concerning Q1–5, Q18.
82 Boethius is cited by name in Q20–21 and Q46.
83 Macrobius’ *Saturnalia* provided two questions that Adelard answered – Q20 = Sat. 7.10 and Q34 = Sat. 7.8.14 – and one question that he deliberately did not answer, between Q34 and Q35. Adelard’s answers to Q20 and Q34 are partially indebted to Macrobius. For the importance of the *Saturnalia* as a source of scientific information (especially its seventh book which is also found separately in the manuscripts), see Lawn, *Salernitan Questions*, pp. 14–15.
84 Q24 ‘Et in philosophicis contemptationibus et in phisicis causarum effectibus, ethicisque etiam consultibus Platoni te penitus consentire percepti’; Q27 ‘dum Platonem sequeris’; Q29 ‘Plato tuus’.
85 Q23 ‘Achademicorum divina quam sanxit Plato sententia’; ibid., ‘auctor huius divine rationis Plato’.
86 Neither the Arabs nor the Saracens are mentioned after Q6.
87 See p. 103 and n. 14 below.
88 See pp. 220–1 below and *De natura deorum*, II.xxv (40–41) and II.xvi (44). This source was identified by Silverstein in ‘Adelard, Aristotle and the *De natura deorum*’. A copy of *De natura deorum* once belonged to Philip of Harcourt, bishop of Bayeux and was bequeathed to Bec by him by 1163; it therefore followed the same itinerary as an early manuscript of Adelard’s *QN* and Seneca’s *Natural Questions* (see p. xxxii below); see Reynolds, *Texts and Transmission*, pp. 126–7 (article by R. H. Rouse).
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Cleanethes and Aristote, rather than to Cicero himself. The whole question of the nature of God, addressed at the end of the QN, is couched in the same form as in Cicero’s treatise.

Some of these classical sources were mediated through the filter of works closer to Adelard’s own time. The application of reason to theological questions in the works of Beringerus of Tours and Anselm of Canterbury savours of the same intellectual climate as the QN. Specific examples of borrowings cannot be pointed to, but it can be shown that Adelard read Boethius’ theory of sound propagation through the medium of the Glosule ad Priscianum or a related work. The only classical texts quoted in extenso and, presumably, directly, remain Calcidius’ translation of Plato’s Timaeus and Boethius’ Conclusio of Philosophy.

There seems, therefore, to be good reason for regarding the learned Arab in the QN as ‘an expository device . . . introduced expressly for the presentation of difficult or hazardous views’. Such a device could, for example, protect Adelard from accusations of heresy in his discussion of animals’ souls. For here, he sets up a contrast between the views of the nephew, which are the orthodox ones – that animals have sensation, not reason, and this is a bodily function which perishes with the animal – to those of the ‘Adelard’ of the dialogue, by which animals not only have discernment and judgement and can understand the spoken word, but also have incorporeal souls which survive the body. For this, Adelard gives no authority besides the persuasiveness of reason. It is no wonder that Adelard had to protect himself from such radical views by saying ‘Don’t blame me! Blame the Arabs!’

There is still the probability, however, that, beyond its function as a literary device, the allegation of Arabum studia has some justification. We need not doubt Adelard’s claims to have visited Tarsus and Mamistra, especially in view of the likely identification of Adelard with the ‘Antiochen’ mentioned by John of Seville and Limia. The anecdotes that Adelard relates concerning these visits are of the same

90 This is the formulation of Margaret Gibson, in ‘Adelard of Bath’, p. 11.
91 There is, however, a striking resemblance between the tenor of Adelard’s arguments for the continuing existence of animals’ souls after the death of their bodies and that of Johannes Scotus Eriugena’s arguments in Periphyseon; see p. 230, n. 25.
92 As Margaret Gibson has done, ‘Adelard of Bath’, p. 10, n. 25: ‘The reference to Tarsus is so close to Acts 21.39 that it need not be a literal statement. In short, Adelard had heard of the earthquake and he had read Acts: I hesitate to construct a visit to the Holy Land on that evidence, unsupported.’
93 See p. xiv above.
tone as those referring to episodes nearer to home – his experience of Mt Etna in the QN and his playing of the cittern in front of the Queen in the DED. They involve meetings and discussions with wise men, not encounters with books, and Adelard is quite careful not to imply that he read any Arabic books: he had searched out the intellectual occupations of Arabs and he had learnt his scientific methodology from ‘Arabic masters’ (magistri Arabici). These terms recall those that Adelard was to use later, in his De opere astrolapso, in which Arabic learning is undoubtedly present, and where he explicitly undertakes to ‘write down in Latin what I have learnt in Arabic from my masters’.94

It is quite likely that Adelard actually studied with masters whose language of scientific discourse (whether they were Jews, Christians or Muslims) was Arabic, both in the Principality of Antioch and when he was back in the West Midlands. The direct results of these Arabic studies were his translations of Euclid’s Elements and the astronomical, astrological and magical texts referred to at the beginning of this introduction. These studies in mathematics, too, are hinted at in the QN, when he promises to write about astronomy95 and admits that he was once keen on finding out more about magic.96 The absence of any clear influence of Arabic sources in the QN may be partly due to the fact that their subject-matter – physics – hardly overlaps with the Arabic mathematical texts (in the broadest sense) which principally engaged the attention both of Adelard and of his contemporary translators. Some of the arguments concerning questions of natural science could well have been picked up in conversations with Arabic scholars, especially those that have a distinctly Aristotelian ring to them.97 But because they have been written down in a Latin which is replete with Classical formulations and vocabulary, and transmuted

94 This is a combination of two phrases: De opere astrolapso, ed. Dickey, p. 148, line 10: ‘quod Arabice didici, Latine subscribamus’, and ibid., p. 172, lines 11–12: ‘De hoc itaque quod a magistris acceperim . . . non minus subscribendum est’. That these masters are, indeed, masters of Arabic learning, if not Arabic speakers themselves, is indicated by several statements in the De opere astrolapso, e.g., ibid., p. 216, lines 7–8: ‘Nunc de casarum equatione, quam magistri ‘tezweietyelbuyt’ [i.e., Arabic ‘taswiyt al-buyut’] vocant, dicendum est’. For the details of this argument see Burnett, ‘Adelard of Bath and the Arabs’.

95 See below, p. 147.

96 See below, p. 193.

97 For example, the problem of infinite movement in Q61 which recalls Aristotle. Physics, Book 3, 2 (202a3), and the reason why winds move around the earth and not upwards, which recalls Aristotle. Meteorologica, 2. 4 (361a23). Adelard’s explicit reference to ‘Aristoteles in physics’ is a misremembering of a misleading citation in Nemesius: see p. 230, n. 31 below.
by the alchemy of Adelard’s strongly individual style. Arabic counterparts are no longer easy to detect.98

The previous paragraphs have suggested that different sources have to be sought for the list of questions themselves, and the answers to those questions. In the manuscript tradition of the QN, the questions continue to have a loose relationship with the solutions. Sometimes they precede the text (MSS GL/PbesWBCcNJ), sometimes they are inserted into the text just before their solutions (MSS QOx), sometimes they appear in both positions (MSS VXXRiEsEF); on one occasion the questions are listed without the text (MS Qu).

The remains of the problem of the title. In the case of the DED, the title is unambiguously given to the text by Adelard himself in the prologue: ‘Hanc autem epistolam “de eodem et diverso” intitulavi’ (‘I have entitled this letter De eodem et diverso’). For the QN, on the other hand, no such authorial confirmation of the title exists. The manuscripts themselves provide many different titles (before more or less settling for ‘De naturalibus quaestionibus’). Adelard himself refers to the work in a descriptive manner (rather than with a title) at the beginning of his DAT: ‘Quoniam in rerum causis disserendis animus noster admodum est fastiditus . . .’ (‘Since our mind has become quite sated with discussing the causes of things’). In MSS GL/P and their family the only title is ‘Ricardo Baiocensi Episcopo Adelardus Bathoniensis sal(uten)’, which is parallel to the actual heading of the DED in the only manuscript that contains that work (MS P): ‘Siracusio episcopo Willelmio Adelardus sal(uten)’. Thus both works take the form of letters (‘epistolaris’), which is the genre to which DED is explicitly assigned (‘in epistola hai . . .’; ‘hanc autem epistolam’). As a letter, no further title would be required. In the same position in the prologue (equivalent to a protocol in a letter) in which, in the DED, Adelard explains the title (i.e., just after the mention of the name of the dedicatee), in the QN Adelard writes that he will reply to his nephew ‘super rerum causis’ (‘on the causes of things’). This agrees with the subject-matter as referred to in DAT, and may explain the origin of the title in MS W: ‘De rerum causis’, a descriptive title.

Several manuscripts (MSS GFBSLWVXNEs) add the motto at the

98 A similar problem confronts anyone seeking the sources of Petrus Alfonsi’s Dialogi. This work is full of philosophical and cosmological speculation, which Petrus without doubt acquired from his Arab learning in the Muslim kingdom of Saragossa before his conversion to Christianity in 1106, but his sources are very difficult to trace to specific Arabic texts; see Burnett, ‘Works of Petrus Alfonsi’.