

# The Stars in the Classical and Medieval Traditions

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## The Latin *Aratea* and their 'Fellow Travellers'\*

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(The Saxl Project, London)

Amongst the many chapters in the history of the transmission of knowledge from Classical Antiquity to the modern age, the formation and dissemination of the large body of astro-mythological material that circulated with the Greek astronomical poem, the *Phaenomena*, written by Aratus of Soli during the last quarter of the 3rd century BC, continues to intrigue modern scholars.<sup>1</sup> This body of material – recently described by one scholar as ‘what you might call the *paratextual* tradition’ of the *Phaenomena*<sup>2</sup> – took many forms, but its general function was to supply information that was deemed necessary in order to help the reader better comprehend both the literary and astronomical allusions contained within the work. The earliest commentaries on the *Phaenomena* tended to focus on the philosophical issues raised by the invocation to Zeus in the first lines of the poem.<sup>3</sup> Slightly later, attention shifted to questions surrounding the relative reliability of the astronomical descriptions in the *Phaenomena*. In particular, the astronomy of the poem attracted the attention of the scientifically-minded scholars living in Rhodes during the early years of the 2nd century BC, such as one sees in the reflections of the now-lost commentary by Attalus<sup>4</sup> and the critical study by Hipparchus.<sup>5</sup>

\* This paper has been developed from the research I carried out while preparing a forthcoming study of the Germanicus manuscript in Aberystwyth (Aberystwyth, National Library of Wales, Ms 735 C). I gladly repeat my most sincere thanks, once again, to Elly Dekker, Antonia Karaisl, Fabio Guidetti, Jordi Pàmias and Adalberto Magnavacca.

<sup>1</sup> The *Phaenomena* ('The Appearances') is the first section of two of Aratus's astronomical poems that have survived, the second being the *Diosemeia* ('On Weather Signs'). Much of the astronomical content of the *Phaenomena* is based on the 4th-century prose treatise by Eudoxus of Cnidus (an earlier study based on his observations in Cyzicus formed the basis of his study entitled the *Phaenomena*, and a later, revised work on the constellations and celestial circles was written in Cnidus and entitled *Ἐνοπτρον*, or 'The Mirror'). For an overview of Aratus's poem and his debt to Eudoxus, see KIDD 1997, pp. 14–18. The best scholarly work on the ancillary astro-mythological material that was either inspired by or travelled alongside the *Phaenomena* can be found in MARTIN 1956, esp. pp. 69 ff.

<sup>2</sup> GEE 2013, p. 7.

<sup>3</sup> Aratus, *Phaenomena*, vv. 1–18. For the early philosophical discussion of these passages, see MARTIN 1956, pp. 12–31 and LE BOURDELLES 1985, p. 24.

<sup>4</sup> As Kidd explains, Attalus, probably the older contemporary of Hipparchus, appears most concerned with proving the validity of Aratus's descriptions of the stars. For a discussion, see MARTIN 1956, pp. 22–27; KIDD 1997, p. 18 and *ad vocem* and BISHOP 2016.

<sup>5</sup> As one of the earliest mathematical astronomers, Hipparchus focussed more closely on the astronomical inaccuracies in Aratus's poem and, by extension, in its prose model by

Quite quickly, though, such concerns became relegated to the much smaller audience of self-selecting mathematically-inclined astronomers, devoted to exploring the measurable rationality of the cosmos.<sup>6</sup>

Over the centuries, the most persistent attention paid to the *Phaenomena* has been amongst those readers interested in the mythology of the heavenly bodies and in the fables detailing the exploits and the appearances of the gods, demi-gods and heroes to whom Aratus refers as part of his descriptions of the constellations. Frustratingly for them, however, is the fact that – with the exception of the extended story woven around the constellation of Virgo;<sup>7</sup> the cursory retelling of the tale of Helicè and Cynosura (Ursa Maior and Ursa Minor), the nurses of the infant Jove;<sup>8</sup> an allusion to the creation of the Hippocrene spring on the heights of Helicon;<sup>9</sup> and the description of the young Hermes creating a lyre from the shell of tortoise<sup>10</sup> – Aratus is tantalisingly brief in his references, merely alluding to a much larger world of myths with which, he assumed, his readers would be so familiar that they did not need more than the occasional prompt, such as calling Capra ‘the Olenian Goat’; referring to the ‘the tragic Cassiopeia... grieving over her daughter’; the ‘dappled Bird accompanying Zeus’ or the way in which Jason towed the Argo stern-first into a safe harbour.<sup>11</sup> Whether this assumption proved to be ill-founded or subsequent scholars saw what one might now call ‘a gap in the market’, within a generation of its composition, the *Phaenomena* began to attract a series of texts the sole purpose of which, it seems, was to provide the ancillary information that was deemed either to be useful or necessary for a fuller appreciation and understanding of the poem itself. In general, these texts provided a series of ‘literary witnesses’ of the individual myths behind the *personae* of each constellation,<sup>12</sup> as well as a descriptive summary of the

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Eudoxus. For additional information, see KIDD 1997, pp. 18–21, including the quote that Hipparchus himself found the meaning of the poem relatively easy to follow and that his sole concern was with the accuracy of the astronomy (p. 19). See also, BISHOP 2016 (who also provides the quote on p. 381).

<sup>6</sup> See Le Bourdellès’s observation that the astronomical data contained within the *Phaenomena* was dismissed by subsequent scholars primarily because it was out of date and his comment concerning the early split between the literary ‘Aratean’ and scientific ‘Hipparchan/Ptolemaic’ camps. LE BOURDELLES 1985, p. 27. Perhaps tellingly, the sole modern edition of Hipparchus’s text remains the ed. and German transl. by MANITTIUS 1894. See also the comparative texts of Attalus and Hipparchus in MAASS 1898, pp. 1–24.

<sup>7</sup> Aratus, *Phaenomena*, vv. 96–136. See ed. and English transl. KIDD 1997, pp. 78–83.

<sup>8</sup> Aratus, *Phaenomena*, vv. 30–35. See ed. and English transl. KIDD 1997, pp. 74–75.

<sup>9</sup> Aratus, *Phaenomena*, vv. 216–224. See ed. and English transl. KIDD 1997, pp. 88–89.

<sup>10</sup> Aratus, *Phaenomena*, vv. 267–69. See ed. and English transl. KIDD 1997, pp. 92–93.

<sup>11</sup> Aratus, *Phaenomena*, v. 164 (Capra), vv. 188–196 (Cassiopeia), vv. 216–224 (‘the Horse’ / Pegasus) and 267–70 (Lyra). See ed. and English transl. KIDD 1997, pp. 84–85, 86–87, 88–89 and 92–93.

<sup>12</sup> I have used the word ‘literary’ here to indicate those mythological fables that were available through existing texts. It is hoped that the relative neutrality of the term will diffuse the question of what role these myths might have played in the changing assumptions of the successive generations of readers of these texts.

physical appearances (*'phaenomena'*) of the distribution of stars within each constellation figure.

Whether or not it was originally intended to function specifically as companion piece to the *Phaenomena*,<sup>13</sup> the best-known work of this type is the so-called *Catasterisms* – from *καταστερίζω* ('to place among the stars') – which presented a collation of the various opinions of a number of Greek authorities concerning the mythographical origins of the constellation figures and a descriptive catalogue of the number, arrangement and relative brightness of its stars. From very early on, the *Catasterisms* has always been associated with or attributed to the Greek astronomer, Eratosthenes (ca. 276 BC – ca. 195 BC). Nevertheless, the acceptance of Eratosthenes as the actual 'author' of the work and/or whether he was the author of both sections of the *Catasterisms* remains a subject of academic controversy.<sup>14</sup>

As is well-known to scholars working in the field, the original version of the *Catasterisms* has not survived, making most suppositions about what it did or did not contain necessarily hypothetical. Instead, we have inherited three sets of Greek texts, each of which provides what appears to be a reduced version of the original text. The two most authoritative are the so-called '*Epitome*' and the equally clearly-named '*Fragmenta Vaticana*'.<sup>15</sup> The

<sup>13</sup> Many of the arguments concerning the motive behind the composition of the *Catasterisms* centre on the order in which the fables are listed in the text, with scholars pointing out that some versions of the Eratosthenian list of constellations follow the order in which the stellar grouping are discussed in the *Phaenomena*. Hence, the poem must be the inspiration behind the *Catasterisms*. Jordi Pàmias, however, suggests that the intermittent references to Aratus as providing a mythographic variant (such as in chapters 2, 9, 18 and 37), support the view that the *Catasterisms* was conceived as a self-contained work, of which Aratus was a part, rather than being the prime authority or stimulus [personal communication, March 2019].

<sup>14</sup> The attribution of the *Catasterisms* to Eratosthenes has been a long and vexed issue amongst scholars, especially amongst the German philologists of the late 19th century. For a resumé of these arguments, see MARTIN 1956, pp. 59–61 and for a discussion of the intellectual context within which these arguments were framed, see PÀMIAS 2016, pp. 3–13. One pivotal aspect behind the acceptance or rejection of the attribution to Eratosthenes has been the issue of whether both parts of the constellation descriptions – the myths and the star catalogues – are contemporary and/or were intended as two equal and necessary components of the original compendium. As a result, several scholars have focussed on trying to date the catalogue by means of the astronomical clues it might contain. For a resumé of these differing views, see MARTIN 1956, pp. 60–62 and 205–09, where he discusses Maass's apparent prevarications on the topic (1883, 1892 and 1895), but notes his leanings towards the belief that the star catalogue could not be earlier than the end of the 1st C AD and should be attributed to Sporos. Martin also mentions BOEHME's counter-argument that Eratosthenes's description of the pole actually points to a pre-Hipparchan date for the star catalogue (see BOEHME 1887, p. 292: ... *dass jene Stelle der Katasterismen vor Hipparch verfasst ist*) and, therefore, that the two parts are inseparable (according to MARTIN 1956, p. 61). He offers similar overviews of the arguments made by ROBERT 1878, OLIVIERI 1897, REHM 1896, 1899<sup>1</sup> and 1899<sup>2</sup>, BOLL 1901 and a host of others. For the purposes of this essay, Eratosthenes is named as the author of the compilation, and both the mythographical chapters and the star catalogues are considered to be integral parts of the whole composition.

<sup>15</sup> The *Fragmenta Vaticana* are so-named after the manuscripts in which these fragments were discovered, Vatican, BAV, Vat. grec. 1087 and Vat. grec. 199. For a useful resumé of the proposed differences between the original and the surviving versions, see OLIVIERI 1897 and the introductory pages to PÀMIAS – ZUCKER 2013. For the purposes of the present study, I have

third is the much more severely edited version that survives in the so-called ‘Greek *scholia*’.<sup>16</sup>

Whereas the majority of the mythological sections of these texts has been largely accepted as accurate reflections of the original *Catasterisms*,<sup>17</sup> the content of the accompanying star catalogues is somewhat problematic for several reasons.

To begin, the ‘astronomical information’ in these star catalogues is presented almost exclusively in terms of descriptions of a star’s position relative to the figure of the constellation being discussed. As such, any ‘scientific value’ that the notations might contain is somewhat compromised by the fact that there are no mathematically-verifiable data in the catalogues to allow modern scholars to determine the scientific accuracy of the ‘positions’ of the stars being described. Hypothetically, this data could be reconstructed from a comparative reading of the *Phaenomena* or from Hipparchus’s critique of Aratus’s poem,<sup>18</sup> if one felt secure in accepting the premise that these catalogues are, themselves, more-or-less directly derived from either source. But the way in which the positions of the stars are listed in the star catalogues – generically, *i.e.*: ‘in the head’, ‘on the back’, ‘in the legs’, etc. – suggests that this information has not been drawn either from a poetic source or from a mathematical treatise, but has been taken from an unknown intermediary, hence adding an unquantifiable ‘wild card’ into the mix.

A second impediment to establishing the context of the star catalogues lies in our relatively poor understanding of exactly how the earliest Greek authors on the heavens visualised the individual figures of the constellations. That is to say that: whereas it seems highly likely that Eudoxus and Aratus used some sort of visual model (such as a rudimentary celestial globe or, perhaps, a planispheric map upon which the outlines of the constellations were drawn) to aid them in their studies,<sup>19</sup> we have a somewhat limited sense

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used the title of *Catasterisms*, except when a particular citation appears only in the *Epitome* or the *Fragmenia Vaticana*.

<sup>16</sup> The Greek *scholia* have been partially edited by ROBERT 1878 and MAASS 1898. A fuller edition appears in MARTIN 1974.

<sup>17</sup> The main points of concern largely have been in identifying those authorities who appear to be either spurious or later additions to the ‘original’, Eratosthenian compilation. See, for example, the discussion of the citation of Artemidorus in the section on Delphinus in PAMIAS 2002 and PAMIAS –ZUCKER 2013, esp. pp. 94–97.

<sup>18</sup> MANITIUS 1894. On the intellectual context for Hipparchus’s criticisms of Aratus, see BISHOP 2019 and n. 66 below.

<sup>19</sup> As recently as 1956, Martin proposed that there were ‘[les] sphères aratéens avant Aratos’, but without describing them. See MARTIN 1956, p. 32. Kidd rejects the possibility, arguing that the lack of mathematical co-ordinates in Eudoxus (‘essential for any attempt to represent the fixed stars accurately on an artificial globe’) and the fact that Hipparchus makes no mention of a Eudoxan globe means that both Eudoxus and Aratus relied exclusively on the night sky for their observations. See KIDD 1997, pp. 17–18. More recently, however, DEKKER has made considerable strides towards reassessing this view and improving our understanding of the structure and use of the Eudoxan/Aratean celestial globe. See DEKKER 2009 and DEKKER 2013. Despite one’s sense that ancient astronomers or curious scholars must have also relied on less expensive and more easily transportable two-dimensional maps of the heavens –

of what the figures on such a globe might have looked like – their precise postures, their attributes<sup>20</sup> and whether or not the stars had been marked.<sup>21</sup> Scholars have yet to address what would seem to be a fairly basic question: namely, were the figures of the constellations imagined by Eudoxus and Aratus identical to those outlined by Hipparchus and Ptolemy; or did the shapes and details of these figures evolve over time?

From what we are able to determine at this stage, the few instances of scientifically-verifiable evidence in the star catalogues suggest that they record a post-Hipparchan source.<sup>22</sup> More recent art historical enquiries have argued in favour of a much later date, positing that the descriptions in the surviving catalogues are actually derived from a set of images dating to sometime during the 3rd or 4th century AD that were intended to 'illustrate' the texts of the catasterismic myths, and that it was these images, which were marked with sets of stars that were differentiated according to the relative brightness, that

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especially given that the ancient Greeks certainly had the basic artistic skills to transpose figures between two- and three-dimensional formats (witness the adaptation a flat illustrative panels to the curved surface of a Greek vase) – there appear to be no specific references to planispheric mapping prior to Ptolemy's *Planisphaerium*. Stückelberger's citation of the 3rd-century BC grammarian Achilles's lament over how later artists, astronomers, grammarians and geometers have disfigured Aratus's poem does not specifically cite the process of transposing information from a globe to a planisphere. See STÜCKELBERGER 1990, esp. p. 75, citing MAASS 1898, p. 80. And, whereas Dekker's examination of the 21 known medieval and Renaissance planispheric maps points to echoes of a 'Eudoxan watermark' in the construction of some of these images, she clearly demonstrates several of the previously overlooked challenges involved in using a two-dimensional model for serious scientific research – most notably, but not limited to, the inflexibility and, therefore, potential anachronism of the two-dimensional format when it comes to the issue of precession. See DEKKER 2013, pp. 116–92.

<sup>20</sup> Whereas the history of the late-Medieval and Renaissance iconography of the heavens has been fairly well-studied, our understanding of the earliest stages of this process has not progressed much beyond the research published in the late 19th century. See, for example, BETHE 1893, THEELE 1897 and THEELE 1898. One looks forward to the same sort of comprehensive examination of the individual constellations as the one recently carried out by Dekker in her study of the structure of the early celestial maps and globes.

<sup>21</sup> As is well-known, the text of the *Phaenomena* mentions only 10 stars – Arcturus ( $\alpha$  Boo), Capella ( $\alpha$  Aur), Castor and Pollux ( $\alpha$  Gem and  $\beta$  Gem), Regulus ( $\alpha$  Leo), Spica ( $\alpha$  Vir), the 'knot-star' of Pisces ( $\alpha$  Psc), Sirius ( $\alpha$  CMa), Canopus ( $\alpha$  Car) and the star shared between Bootes and Taurus ( $\beta$  Tau). Aratus also mentions the stellar groupings of the Hyades, Pleiades, Haedi, Aselli and Praesepe. This apparent lack of nomenclature supports the view that if there had been a Eudoxan or Aratean globe, it probably was either sparsely or not at all marked with individual stars.

<sup>22</sup> This conclusion, in itself, however, may well be methodologically suspect as the primary motive behind most of the studies analysing the position of the stars in the star catalogues has been to attribute or deny the authorship of the *Catasterisms* to Eratosthenes and/or attempt to ascertain if the two parts of the *Catasterisms* are co-eval (see n. 14 above) Given that many of Hipparchus's observation about the errors in Eudoxus and Aratus seem to be ill-founded (see n. 66 below), using this information to date the stars catalogues seems an equally risky enterprise. As is clear from the arguments presented below, I would argue that it is not the *astronomy* of the star catalogues that requires investigation, because the means by which this information was transmitted was predominantly pictorial and not, strictly speaking, cartographic. See pp. 295–98 below.

served as the basis for the corresponding descriptions that appear in the star catalogues.<sup>23</sup>

As a result, we have a somewhat circular situation in that scholars generally agree that this combination of myth-and-star catalogue is a defining feature of the *Catasterisms* and probably reflects the format of the original, 3rd-century BC composition; but the exact relationship between the extant versions of the text and the original model is fraught with uncertainties. For now, it seems safest to conclude that the mythological sections probably remained more consistent throughout the ages owing to the inherent conservatism that one imagines would have been elicited by the authority of their literary citations. The star catalogues, however – cut adrift from any mathematical context and subject to the vagaries of artistic interpretation – were much more vulnerable, and even though the general format may reflect an Eratosthenian source, the actual content most likely does not.<sup>24</sup>

In addition to the catatasterismic myths, the stars catalogues and – most likely – an accompanying set of illustrations, a wide range of material began to adhere to the *Phaenomena*. Over the subsequent centuries the poem also attracted some spurious prefaces, various versions of the life of Aratus, one or two lists of constellations attributed to Eratosthenes and Hipparchus and discussions of the constellations as they appear on the sphere.<sup>25</sup> Written in Greek, this so-called ‘Alexandrian compilation’ seems to have been extremely popular across the Graeco-Roman world, appearing in several different formats with varying additions and subtractions, and serving as the inspiration for numerous authors and poets writing in both Greek and Latin.<sup>26</sup>

<sup>23</sup> This would be the corollary of Martin’s suggestion that the actual constellation illustrations that have come down to us through the tradition of the ‘illustrated star catalogue’ probably date from the 3rd C AD. See MARTIN 1956, p. 32. For additional art historical references, see pp. 295–98 below. Nevertheless, as Pàmias and Zucker suggest, the tradition of an illustrated star catalogue should probably be considered as dating as far back – if not an innovation introduced by – Eratosthenes. They convincingly argue that each chapter of the *Catasterisms* was probably preceded by a single image; and it is to this image the author is referring when he uses the deictic form οὗτος. For additional information and insights, see PÀMIAS – ZUCKER 2013, p. xcvi.

<sup>24</sup> See the recent summary by Guidetti, who posits that the pictorial models for these manuscripts we have inherited were produced ‘during the fourth or early fifth century AD, when a great interest in astronomy is attested among the late Roman aristocracy’. See GUIDETTI 2018, p. 68.

<sup>25</sup> The best scholarly work on this complicated subject can be found in MARTIN 1956, esp. pp. 69 ff. His arguments are well-captured by in the introduction to PÀMIAS – ZUCKER 2013.

<sup>26</sup> A version of the Aratean corpus, with a set group of texts ordered in a particular fashion, appears to have come together sometime between the beginning of the 2nd and the end of the 3rd century AD. Its contents were first proposed by MAASS 1897, pp. 305–332 and reiterated by MARTIN 1956, pp. 42–44. No complete version of this compilation, which philologists – following Martin – usually refer to as ‘Φ’, has survived, but its contents have been largely reconstructed by combining a number of the later Greek and Latin fragments that formed a part or were derived from the original version of the original grouping of texts. For a fuller discussion, see MARTIN 1956, pp. 69–72; MARTIN 1974, pp. iv–v; LE BOURDELLÈS 1985, pp. 26–29 and KIDD 1997, p. 44. As pointed out to me by Jordi Pàmias, however, the idea that there was a single Φ edition is highly unlikely and represents an unacceptable simplification of the more likely scenario – namely, that the *Phaenomena* was so widely diffused throughout



One great challenge that arose during the years surrounding the dawning of the first millennium AD was the translation of the *Phaenomena* into Latin. The earliest attempt appears to have been made by the Roman statesman and man of letters, Marcus Tullius Cicero, who composed his translation sometime during his late teens or early twenties and which survives only in fragmentary form.<sup>27</sup> The second Latin translation has been ascribed to Germanicus, the adopted son of Tiberius Caesar,<sup>28</sup> though other members of the extended Julio-Claudian clan have been proposed as its author – including Julius Caesar, Tiberius and Domitian.<sup>29</sup> If one accepts the attribution to Germanicus, the evidence would then point to its having been written between 14 and 19 AD. The *terminus post quem* is provided by the reference to the deified Augustus Caesar (who died on 19 August 14 AD); the *terminus ante quem* by the death of Germanicus himself (who died in Antioch on 10 October 19 AD).<sup>30</sup>

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the Mediterranean that there must have always been multiple variants of both the poem and its 'apparatus' [personal communication March 2019]. For a similar view, see the criticism of Martin's thesis by KEYDELL 1958, esp. p. 580. Also, notably, Martin himself revises the idea of a single  $\Phi$  edition in his later edition of the Greek *scholia*, suggesting that there were '*duo certe exemplaria*' of  $\Phi$  – though it might be wiser to add 'at least' to this qualification. See MARTIN 1974, p. v.

- <sup>27</sup> He describes himself as being '*admodum adolescentulus*' in the *De natura deorum*, II, 104. For additional information on the dating of the work, see BUESCU 1966, pp. 29–34 (with a resumé of the scholarly opinions on the date of the poem's composition), SOUBIRAN 1972, p. 9 (who suggests 90–89 BC) and GEE 2013, pp. 61–62 (arguing 89–85 BC) and PELLACANI 2015, pp. 8–15 (who re-examines the opinions of previous scholars and settles on a probable date of 90–89 BC).
- <sup>28</sup> The earliest attribution to Germanicus Caesar appears in the *Institutiones Divinae* of Lactantius, V, v, 4, quoting vv. 112–13 and describing them: ... *ut Germanicus Caesar in Arateo loquitur carmine* (ed. BRANDT 1890, p. 414). This attribution is repeated by Jerome in his *Commentariorum in Epistolam beati Pauli ad Titum liber unus*: ... *quod hemistichium in Phaenomenis Arati legitur; quem Cicero in Latinum sermonem transtulit et Germanicus Caesar, et nuper Avienus, et multi, quos enumerare perlongum est* (ed. MIGNÉ PL, XXVI, 1854, col. 572b and BUCCHÌ 2003, pp. 29–30 /cited as 655c/).
- <sup>29</sup> Firmicus Maternus appears to have credited the poem to Julius Caesar (*Matheseos Libri VIII*, II, praef., 2): *Sed nec aliquis paene Latinorum de hac arte institutionis libros scripsit nisi paucos versus Iulius Caesar et ipsos tamen de alieno opere mutuatos, Marcus vero Tullius, princeps ac deus, Romanae eloquentiae* ... (ed. KROLL – SKUTSCH 1968, II, p. 295); but as Fabio Guidetti has pointed out to me, the term 'Julius Caesar' could easily refer to Germanicus whose full name – after his adoption by Tiberius – was 'Germanicus Julius Caesar'. Guidetti also suggests that had Firmicus wanted to refer to Gaius Julius Caesar, he probably would have used the term 'Divus Julius' [personal communication, August 2018]. In studies dating from the turn of the 19th century, a series of scholars attributed the poem to Domitian. As recently as 1976, Gain felt that 'the evidence does not allow one to say whether the author was Tiberius or Germanicus'. See GAIN 1976, p. 20. Le Bœuffle, however, firmly attributes the poem to Germanicus, only parenthetically mentioning other possibilities ('*nous mentionnerons seulement pour mémoire...*'). See LE BŒUFFLE 1975, pp. xi and xlvii–xlix.
- <sup>30</sup> Note that vv. 558–60 of Germanicus's translation mentions the catasterism of Augustus. It is Le Bœuffle's view that the work is not a juvenile effort, and it is unlikely to have been written during the period of his military campaigns in Germany (11–16 AD). This suggests that it was written between 16 and 17 AD, during Germanicus's sojourn in Rome. See LE BŒUFFLE 1975, pp. vii–x. More recently, however, Possanza (following Fantham) has argued that several aspects of the poem point to it having been written during Germanicus's 'student days'. Therefore, he suggests the span between 4 AD (when Germanicus was adopted by Tiberius) and



Fig. 1: Perseus. London, British Library, Harley Ms 647, f. 4r

As with its Greek model, both these Latin translations of the *Phaenomena* began to attract the same sort of material that was circulating with the Greek version of the poem. As so few early manuscripts of Cicero's version of the

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7 AD (when he began to take on political and military responsibilities), tending more towards the earlier end of this range of dates in his proposal that the poem was written c. 4 AD. See POSSANZA 2004, pp. 15–16 and FANTHAM 1986, p. 254. It should be noticed that there are still those who argue that the dedicatee of the poem is Tiberius. See LE BOURDELLÈS 1985, p. 29.



Fig. 2: Perseus. London, British Library, Cotton Ms Tiberius C 1, f. 22v

poem survive, it is difficult to discern any 'patterns of accumulation' within such a small cache. Of the five known illuminated manuscripts, for example, three contain prose excerpts drawn exclusively from Books II and III of the *De astronomia* of Hyginus, all of which have been set within the bodies of the constellations themselves [Figs 1, 2 and 3].<sup>31</sup> Given that the illustrations in one of these manuscripts (London, BL, Harley Ms 647) has been cited on stylistic grounds as being closely based on a 4th-century model [Figs 4 and 5],<sup>32</sup> it seems wholly possible that the practice of attaching fragments of Hyginus

<sup>31</sup> London, BL, Harley Ms 647 (from Aachen, c. 830–840); London, BL, Cotton Ms Tiberius C 1 (East England, possibly Peterborough, first quarter of the 12th C/c. 1122/) and the fifteenth-century North Italian (Lombardy) copy in Göttweig, Stiftsbibliothek, Ms 7 (146). The identification of the Hyginus texts was first made by VOGELS 1884. It was edited by KAUFFMANN 1888. For a fuller description of the first two manuscripts, see SOUBIRAN 1972, pp. 106–111 and 113–114. For an art historical overview of these manuscripts, see BLUME – HAFNER – METZGER 2013, I, pp. 68–69 and 321–26 (Harley 647); pp. 138 and 314–20 (Cotton Tib. C 1) and BLUME – HAFNER – METZGER 2016, pp. 101–09 and 725–31 (Göttweig).

<sup>32</sup> For a discussion of the late-Classical model for London, BL, Harley 647, see SAXL 1938.

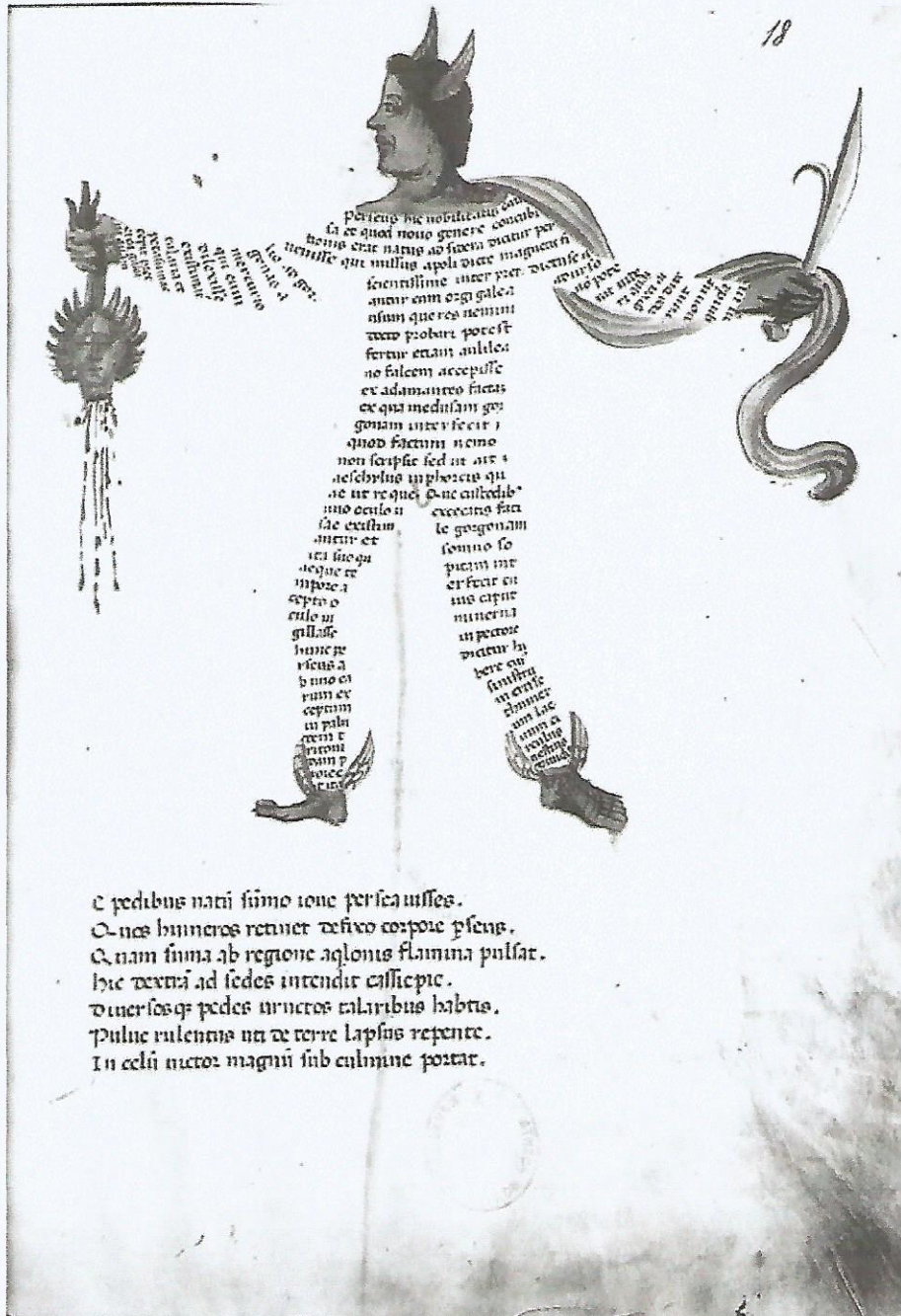


Fig. 3: Perseus. Göttweig, Stiftsbibliothek, Ms 7 (146), f. 18r



Fig. 4: Perseus (detail). London, British Library, Harley Ms 647, f. 4r



Fig. 5: Detail of the figure of Christ and the Bleeding Woman. Catacomb of Marcellinus and Peter, Rome

to Cicero's verse had a Classical precedent, though venturing too far beyond suggesting this as a possibility remains a risky endeavour.<sup>33</sup>

The two other illustrated Cicero manuscripts also contain ancillary texts. One (London, BL, Cotton Ms Tiberius B V, pars 1) features citations taken from both Hyginus and the *Revised Aratus Latinus*.<sup>34</sup> These excerpts – Classical and 'modern'<sup>35</sup> – have been set as prose paragraphs surrounding the illustrations and are generally placed at the top of each folio, while the text of the verse runs along the bottom of each page [Fig. 6]. The content is exclusively mythological (that is, there is no star catalogue included) and the citations are limited to a single author. So, for example, the texts for Aries, Triangulus, Lyra, Cygnus, Capricorn, Sagitta, Eridanus and the section on the Five Planets have been derived from Book II of Hyginus; while Pisces, Perseus, the Pleiades, Aquarius, Sagittarius, Aquila, Delphinus, Orion, Sirius, Lepus, Navis, Cetus, Canis Maior, Piscis Austrinus, Ara, Centaurus, Hydra and Canis Minor (Anticanis) stem from the *Revised Aratus Latinus* (see **Appendix I**).

In the final manuscript in this group, the text of the poem is interspersed with large illustrations and a series of additional passages, drawn from the 8th-century ps.-Bedan *De signis caeli*, is set into the flanking margins (London, BL, Harley Ms 2506). These excerpts solely list the positions of that stars within the constellation figures [Fig. 7].<sup>36</sup>

In each case, then, these additions reflect the decision of scribe and or illuminator to add text taken from an existing, independent prose source to create a new amalgam. Nevertheless, it is difficult to imagine how five such apparently closely-related manuscripts could be so different in the choices that were made about which ancillary material to use and how to present it on the page.

The Latin translation of the *Phaenomena* attributed to Germanicus Caesar also attracted additional texts. At one level, the variety in how this additional material was chosen and presented is not that dissimilar from what one sees with the Cicero manuscripts, but the much greater number of surviving manuscripts shows how, once a pattern becomes accepted, it remains relatively stable throughout the generations of its subsequent copies. The main

<sup>33</sup> Although we do not possess any manuscripts of Hyginus's text that predate the early 9th century (see Valenciennes, Bibliothèque comunale, Ms Elnonensis 337 /ex 325/), it does seem that the text was known – or, at least, it was cited by Isidore – in the early 6th century. See LE BOURDELLÈS 1985, pp. 36–37. For information on the earliest surviving manuscript, the illustrations for which, sadly, were never completed, see LE BŒUFFLE 1983, pp. xlvii–xlviii.

<sup>34</sup> London, BL, Cotton Ms Tiberius B V, pars 1 (English, Canterbury /?/, second quarter 11th c). The identification of the secondary texts was made by VOGELS, though he followed BREYSIG 1867 in citing the excerpts from the *Revised Aratus Latinus* as the 'scholia Sangermanensia'. He also provided a collation of the text against Breysig's edition. See VOGELS 1884, pp. 6–7 and 23–25. For a fuller description of the contents and illustrations of the manuscript, see SOUBIRAN 1972, pp. 111–113 and BLUME – HAFNER – METZGER 2013, I, pp. 108–112 and 308–13.

<sup>35</sup> 'Modern' in the sense that they date to the 8th century, though it is unlikely that the 11th-century scribe of the Cotton Cicero would have recognised them as such.

<sup>36</sup> London, BL, Harley Ms 2506 (Fleury, c. 988–944). See BLUME – HAFNER – METZGER 2013, I, pp. 91–95 and 325–32.

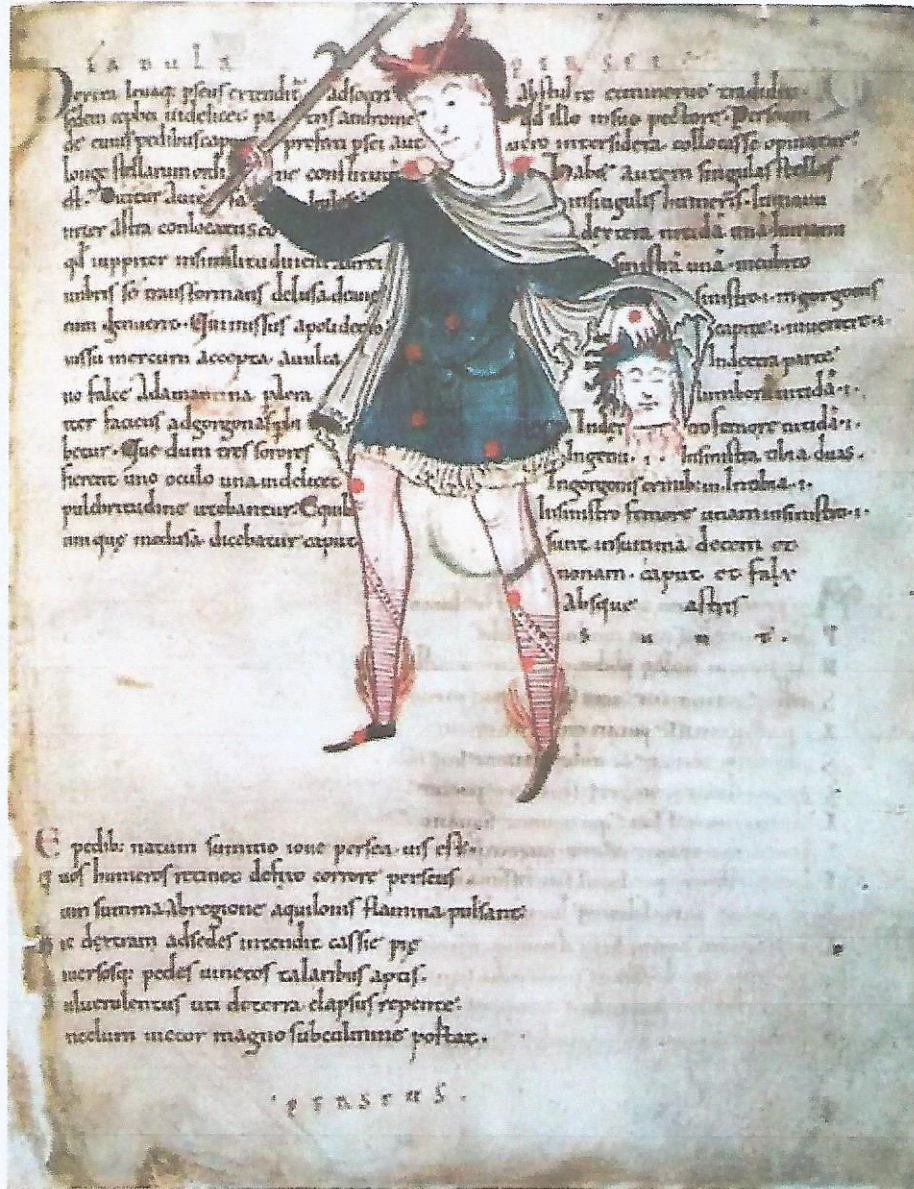


Fig. 6: Perseus. London, British Library, Cotton Ms Tiberius B V, pars 1, f. 34r

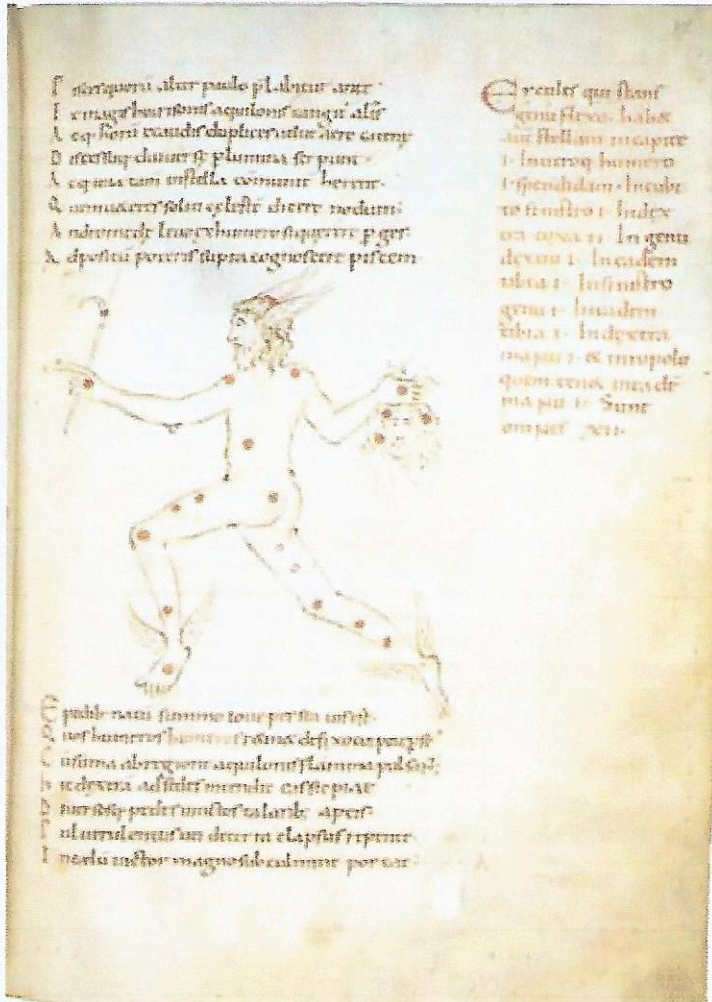


Fig. 7: Perseus.  
London, British  
Library, Harley  
Ms 2506, f. 37v

exception to this rule, however, appears in the so-called 'Z' family of Germanicus manuscripts<sup>37</sup> – represented by three, closely-related manuscripts, now in Leiden, Boulogne-sur-Mer and Bern<sup>38</sup> – which all share a common version

<sup>37</sup> The first proposals regarding a possible *stemma* for the different surviving Germanicus manuscripts were made at the beginning of the 19th century. See ORELLI 1832. The manuscripts were divided into two families, which are still referred to with the initials first given to them by Baehrens in 1879: 'Z' and 'O'. See BAEHRENS 1879, esp. pp. 142–47. Over the past century, scholars have refined the details of the different branches of this *stemma*, but the early observations about how the different groups are defined remain largely intact. See, for example, MANITIUS 1897, pp. 305–32; BREYSIG 1867, pp. v–xxx; MARTIN 1956, pp. 38–51; GAIN 1976, pp. 1–8 and, most valuable amongst the more recent studies, REEVE 1980, pp. 508–22, esp. pp. 511–18 and REEVE 1983, pp. 18–24.

<sup>38</sup> Leiden, Universiteitsbibliotheek, Voss. lat 4° 79 (Lotharingia /Aachen?), second quarter 9th C /816?); Boulogne-sur-Mer, Bibliothèque municipale, Ms 188 (Saint-Omer /N. France/, 10th



of the core text, but, as one has seen with the Cicero manuscripts discussed above, each manuscript presents this text, its illustrations and any additional information in a different manner.

With the Leiden *Aratea*, each bi-folio presents a full-page, framed illustration of the constellation in question, faced by the relevant section of verse from Germanicus written in brown *capitalis rustica*. At certain points in the text, however, the Germanicus text elides into passages taken from the 4th-century Latin translation of the *Aratea* by Rufus Festus Avienus [Fig. 8].<sup>39</sup> For example, the text describing the Gemini on f. 17r is presented twice. In the upper section of the page, the text is written in Carolingian majuscules in brown ink, and reads:

AD CAPITIS SUBERUNT GEMINI PROLEMQUE TONANTIS  
AEGREGIAM ET PROPRIO POST REDDITA NUMINA CAELO  
NA[M] LACHEDEMONIIS CUM MARS CALUISSET APHIDNIS  
CASTOR ACECROPI TULIT INCREMENTIA BELLI.<sup>40</sup>



Fig. 8: Gemini with flanking text. Leiden, Universiteitsbibliotheek, Voss. lat. 4° 79, ff. 16v–17r

C) and Bern, Burgerbibliothek, Ms 88 (Franco-German /St Bertin?/, early 11th C/c. 1000/). For the most recent overview of the art historical literature on these manuscripts, see BLUME – HAFNER – METZGER 2013, I, pp. 53–67 and 292–98 (Leiden); pp. 112–13 and 219–22 (Boulogne-sur-Mer) and pp. 114–15 and 214–17 (Bern).

<sup>39</sup> The work has been edited by BREYSIG 1882 and SOUBIRAN 1981.

<sup>40</sup> See the reproduction of this page in KATZENSTEIN and SAVAGE-SMITH 1988, p. 19.

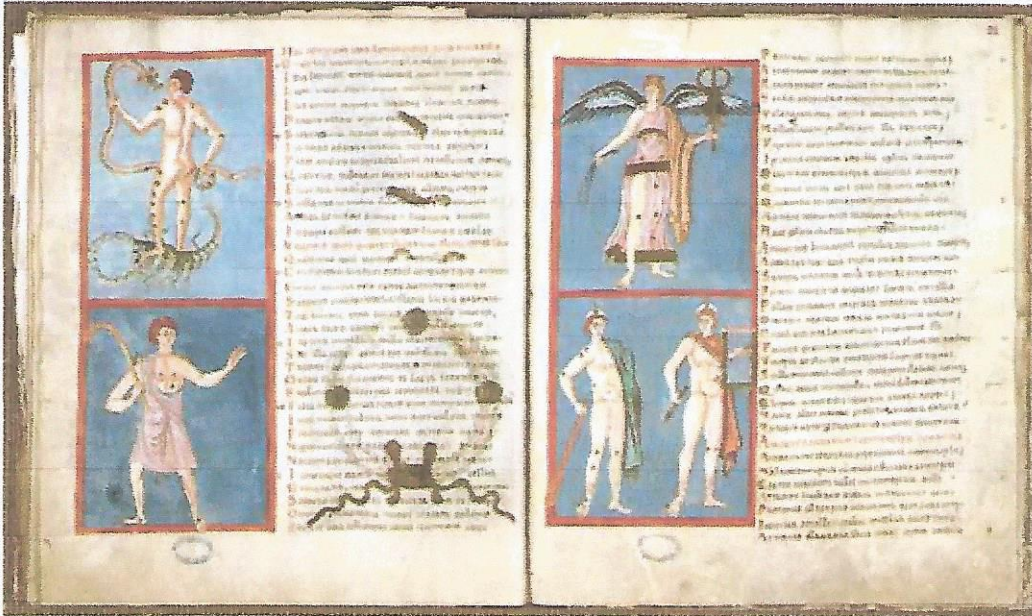


Fig. 9: Ophiuchus, Bootes, Virgo and Gemini. Boulogne-sur-Mer, Bibliothèque communale, Ms 188, ff. 21v–22r

The opening of the line is verse 148 from the Germanicus poem (here marked in bold), but the subsequent text is the end of verse 370 to verse 373 from Avienus.<sup>41</sup> This sort of interweaving of the two texts occurs in three other places in the manuscript.<sup>42</sup> On the same page, below each section of *capitalis rustica* text, the same lines from this ‘interwoven poem’ reappear – written in 13th-century black Gothic minuscule. This later text is not quite the same,

<sup>41</sup> The Germanicus text without intervention describes the Gemini, Cancer and Leo and should read:

... *at capiti suberunt Gemini. Qua posterior pes, / horrentisque iugas et fulvum cerne Leonem. / Hunc ubi contigerit Phoebi violentior axis, / accensa in Cancro iam tum geminabitur aestas.* (‘... while the Twins will be under her [Cancer’s] head. Below her hind feet, you will find the shaggy mane of the tawny Lion. /150/ When the terrible chariot of the Sun touches this sign, the heat of summer, which began in the Crab, is doubled’ /vv. 148–151/. Ed. and English transl. LIPPINCOTT 2019). The Avienus passage concerns the Gemini exclusively and reads: ... *Spartanam, geminos, subolem prolemque tonantis / egregiam et proprio post reddita numina caelo. / Nam Lacedaemoniis Mars cum caluisset Aphidnis / Castora Cecropi tulit inclementia belli* (vv. 370–73, ed. BREYSSIG 1882, p. 16).

<sup>42</sup> For example, following the section cited above, the verses of Avienus continue (vv. 376–78). Then a line from Germanicus follows (v. 147), which is interrupted by an additional section of Avienus (vv. 388–90). Later, in the section on Lepus, in the vv. 341–44 of Germanicus, there is an odd mixing of lines with Avienus vv. 747–50. Finally, following the Germanicus fragm., vv. 16, there are a series of disconnected lines taken from Avienus: vv. 1741–62, 1769–70, 1773, 1870 and 1877–78. For a description and discussion, see SOUBIRAN 1981. In one of his less inspired moments, Breysig suggested that the mixture of Germanicus with Avienus clearly showed that the Leiden manuscript was a fake and that it should be excised from the literature. See BREYSSIG 1882, pp. 401–17, esp. p. 402.

however, and shows evidence of having been corrected against a superior manuscript.

In the Boulogne-sur-Mer manuscript, the text and illustrations are presented in a two-column format, with the pictures on the left and the text on the right [Fig. 9]. There is neither marginalia nor commentary, but the manuscript does preserve the oddly 'doctored' version of the poem seen in the Leiden *Aratea*, with the same insertions of lines from Avienus. A similar text also appears in the Bern manuscript. Here, the poem occupies a large column running down the centre of each folio. The illustrations are placed in the inner margins of each page and the outer margins are filled with excerpts from the star catalogue that appears in the ps-Bedan, *De signis caeli* [Fig. 10].<sup>43</sup> The ultimate rationale for the insertion of the lines from Avienus remains somewhat baffling,<sup>44</sup> but the fact that the version of Germanicus's poem preserved in the 'Z' family of manuscripts had attracted illustrations and the addition of a star-catalogue reinforces the idea that it – like its Greek predecessor – was destined never to travel very far without attracting companions.

In contrast, all the Germanicus manuscripts belonging to the so-called 'O' family lack the interventions drawn from Avienus and none have marginalia cited from other sources. Instead, they all contain substantial sections of prose (usually referred to by modern scholars with the slight misnomer of '*scholia*')<sup>45</sup> that are inserted directly into the text of the poem itself at irregular intervals. All these manuscripts follow a similar format in their presentation – generally adhering to a single column in which the poem, the prose insertions and the relevant illustrations are stacked one upon the other [Fig. 11].<sup>46</sup> Moreover, evidence suggests that both the *scholia* and illustrations were inserted at the same time and done in such a way that several lines of the text of the poem were regularly deleted to accommodate them.<sup>47</sup>

<sup>43</sup> The text has been edited by BREYSIG 1867, pp. 233–38 and DELL'ERA 1979c. It is worth mentioning that Breysig did not recognise the ps-Bedan source of this marginal text and published it originally as a newly-discovered '*scholia Bernensia*' (BREYSIG 1867, pp. 233–38). This error was first noted by MAASS 1898, pp. 582–94. See also DELL'ERA 1979c, pp. 269–70.

<sup>44</sup> Martin offers the interesting conclusion that the strange conjunction of texts in the Leiden *Aratea* reflects the fact that the manuscript is essentially a collection of pictures that were haphazardly assigned pieces of text from Germanicus or Avienus and not always correctly. This view is reiterated by Guidetti, who notes that the organisation of the manuscript is determined by the regular spacing of the pictures, with the image always on the left. Martin's subsequent suggestion, that one might be able to trace the origin of these images back to the original Greek text of the *Phaenomena* (... *mais bien plutôt Aratos lui-même*), seems less compelling, however. See MARTIN 1956, p. 40 and GUIDETTI 2018, p. 77.

<sup>45</sup> As Martin points out, that the use of the word '*scholia*' is misleading in that these additions are not intended as a commentary on the text of Germanicus, but are set of additions stemming from a parallel tradition that have been appended to the text. See MARTIN 1956, p. 38 and the similar observations by PAMIAS – ZUCKER 2013, pp. lxxxiv–lxxxv, citing BREYSIG 1867, where they imply that the term '*scholia*' was first coined by BREYSIG 1867, though HERTZ uses the term in 1847.

<sup>46</sup> The exception is the Germanicus manuscript in Madrid, Biblioteca nacional, Ms. 19, where there is a two-column format – though a similar stacking of text, prose and illustration still occurs in the same manner.

<sup>47</sup> See LIPPINCOTT 2006, pp. 8–12.

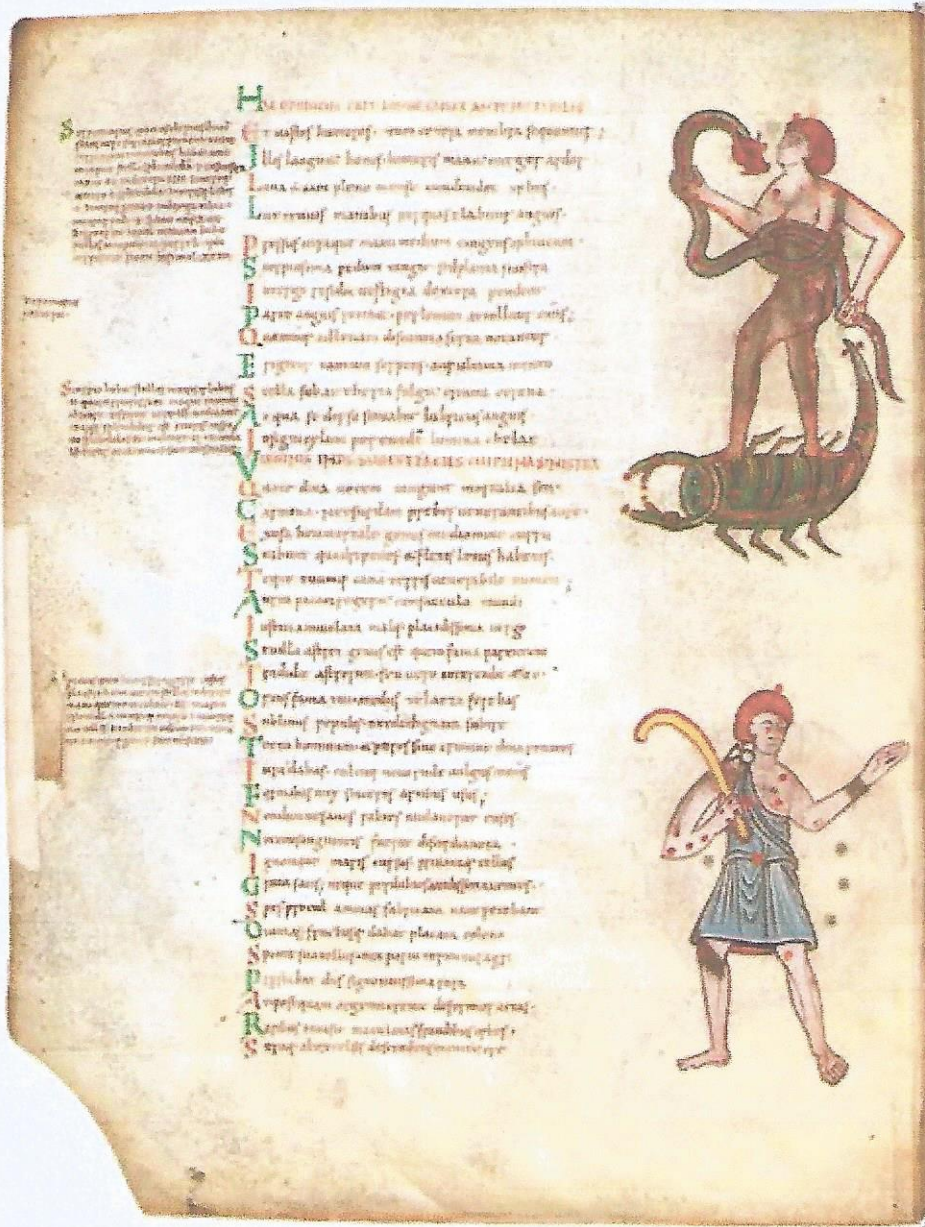
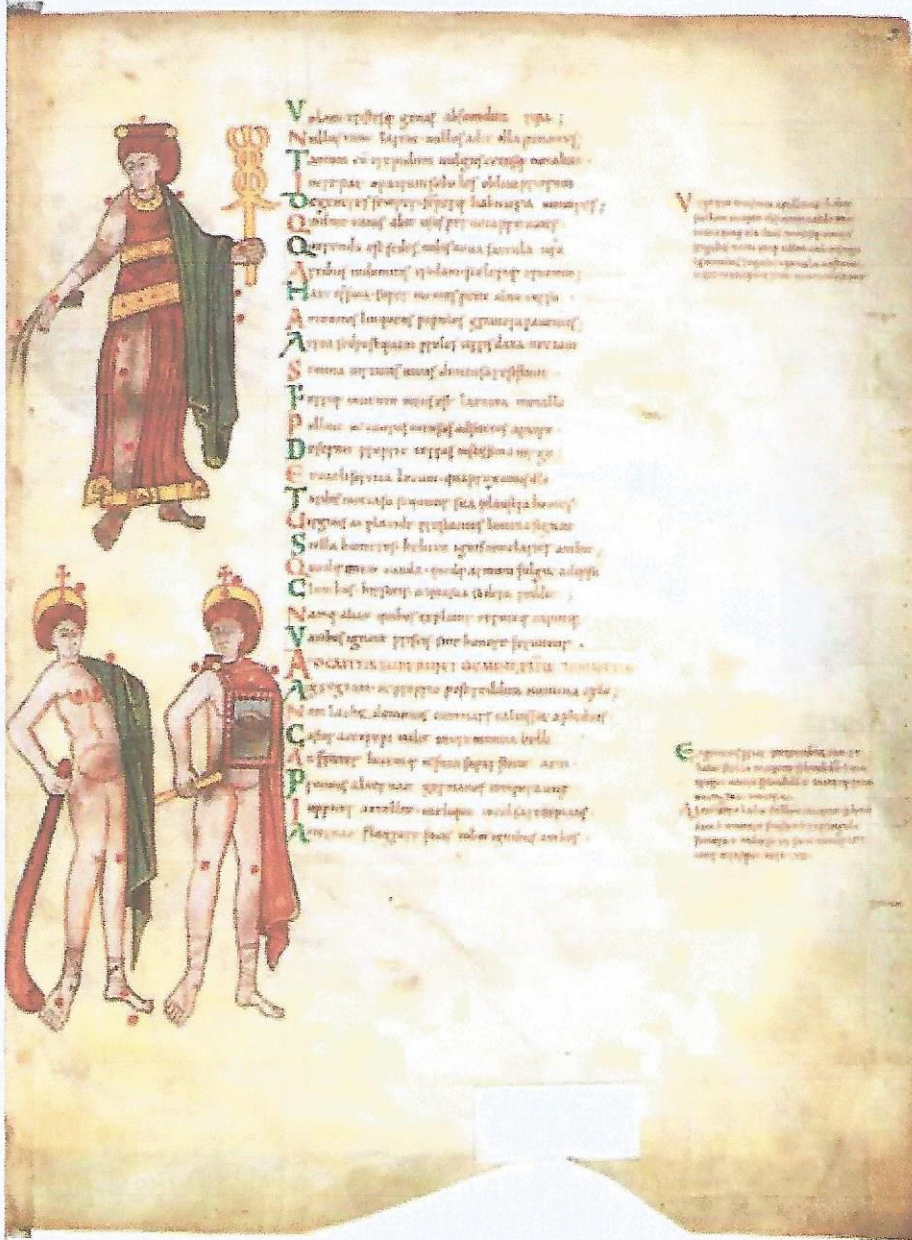


Fig. 10: Ophiuchus, Bootes, Virgo and Gemini. Bern, Burgerbibliothek, Ms 88, ff. 2v-3r. (Photograph: Codices Electronici AG, www.e-codices.ch)



The oldest and arguably most interesting of the prose insertions are those known as the *scholia Basileensia*, after the earliest Germanicus manuscript in which it appears: the early 9th-century manuscript from Fulda, now in Basel.<sup>48</sup> It represents a fascinating work of Roman scholarship, which – to my mind – fully deserves more scholarly attention than it has received to date. Its composition can be dated to sometime between the first of second decade of the 1st century AD and the years 303–311 AD. The first parameter is set by the fact that the scholiast makes a reference to two Latin authors, Nigidius Figulus (c. 98–45 BC) and Ovid (43 BC–17/18 AD);<sup>49</sup> and the second by a series of references to the *Aratea* of ‘Germanicus Caesar’ by the early Christian author, Lactantius.<sup>50</sup> The citations by Lactantius are particularly pertinent since his quotations are not of the text of the poem, but have been taken from the *scholia*. This clearly indicates that the *scholia* had already been inserted into the poem in Lactantius’s version of the text. The fact that he specifically attributes the *scholia* itself – albeit wrongly – to Germanicus, demonstrates the extent to which the poem and *scholia* had become intertwined by the first decade of the 4th century.<sup>51</sup>

Structurally, the *scholia* focus on two aspects of each constellation or constellation grouping: the myths and the stars. The inspiration behind the work is obviously the *Catasterisms* and, in several instances, the similarity to the remaining Greek fragments of the text of Eratosthenes runs close to being little more than a Latin translation of Eratosthenes’s text of both the catasterismic myths and the descriptions of the positions of the stars.

One major question concerning the *scholia Basileensia* is its exact relationship with the other texts that contained versions of Eratosthenes’s catasterismic myths and star catalogues – namely, the surviving Greek *scholia* descended from the ‘Alexandrian compilation’; the two Latin versions of these

<sup>48</sup> Basel, Öffentliche Bibliothek der Universität, Ms AN IV 18, possibly commissioned by Hrabanus Maurus, c. 820–30. For a fuller description see BLUME – HÄFFNER – METZGER 2013, I, pp. 73–74 and 202–07. The *scholia* were first noticed and named by HERTZ 1847, pp. 421–22. They were first published by EYSSENHARDT in 1866 (pp. 377–422) and then published alongside an edition of the poem with other versions of the *scholia* (the *scholia Stroziana* and the so-called ‘*scholia Sangermanensia*’ /a.k.a. the *Revised Aratus Latinus!*) by BREYSIG 1867, pp. 55–104. For the edition by ROBERT 1878, see pp. 17–18 below. The most recent editions of the *scholia Basileensia* are DELL’ERA 1979b and LIPPINCOTT 2019. In addition to the Basel manuscript, the *scholia* also appear in: Berlin, PKB Staatsbibliothek, Phillipps 1832, II, ff. 86r–92v (Reims?, late 9th C); Paris, BnF, lat. 5239, ff. 226v–231v (Limoges, c. 950 /before 983/); Paris, BnF, lat. 7886, ff. 1r–14r (Corbie, late 9th C) and Aberystwyth, National Library of Wales, Ms 735 C, ff. 11v–24v (Limoges, early 11th C).

<sup>49</sup> For a discussion of the citations of these two authors, see pp. 303–04.

<sup>50</sup> There are three references. See Lactantius, *Institutiones Divinae*, I, xi, 64 (concerning Aquila, cf. DELL’ERA 1979b, p. 354); I, xxi, 28 (Cancer and the Aselli, cf. DELL’ERA 1979b, p. 330) and I, xxi, 39 (the bright star Capella, cf. DELL’ERA 1979b, p. 333). See also, MARTIN 1956, p. 41 and LIPPINCOTT 2019.

<sup>51</sup> See Lactantius, *Institutiones Divinae*, I, xi, 64: *Caesar quoque in Arato refert Aglaosthenen dicere Iovem cum ex insula Naxo adversus Titanas proficisceretur et sacrificium faceret in litore, aquilam ei in auspiciis advolasse; quam victor bono omine acceptam tutelae suae subiugarit.* See DELL’ERA 1979b, p. 354 and LIPPINCOTT 2019.

texts (the *Aratus Latinus* and *Revised Aratus Latinus*) and the contents of Books II and III of Hyginus's *De astronomia*.

In 1878, Karl Robert published several of these texts in a parallel format, which provided graphically striking evidence not only of the high level of overlap, but also of the dissimilarities amongst these texts.<sup>52</sup> At one level, a quick visual analysis of Robert's edition suggests that that material presented in the *scholia Basileensia* preserves a larger number of parallels with the original Greek text of the *Epitome* than with the Greek *scholia*, the *Revised Aratus Latinus* or Hyginus's *De astronomia*. Whereas this may be the case, one should also be aware that Robert's presentation has been constructed primarily to highlight the *Nachleben* of what he knew about the *Catasterisms* in 1878. His objective was to show how these *reliquiae* were either preserved or developed in subsequent texts and, to that extent, he succeeded.<sup>53</sup> Nevertheless, in the intervening years since Robert's study, several other manuscripts bearing evidence of the influence of the *Catasterisms* have been discovered, significantly altering our view of how these texts compare. Moreover, if one focusses less on the continuity of the Eratosthenian tradition and includes examples from Robert's own selection of texts that show divergences from the *Catasterisms*, the conclusions are slightly more complicated than Robert's presentation seems to have suggested.

In an attempt to address this question, I have collated two sets of data. The first is the citations of Greek and Latin authors cited in the *Epitome*, the *Fragmenta Vaticana*, Hyginus, the *scholia Basileensia*, the Greek *scholia* to the *Phaenomena*, the *Aratus Latinus* and the *Revised Aratus Latinus* (see **Appendix 2**). The citations have been recorded in a form that attempts to highlight concordances and divergences in the descriptions of each author. For example, in the section on Virgo, both the *scholia Basileensia* and Hyginus cite Hesiod by name, but the *Epitome*, *Fragmenta Vaticana*, Greek *scholia* and *Aratus Latinus* also mention his *Works and Days* and *Theogony*. In the *Revised Aratus Latinus*, the reference states only: *quam fabulose Hesiodus*.<sup>54</sup> When this information is reduced to a numerical summary (see **Appendix 3**), it appears that there are four sets of numbers worthy of note:

<sup>52</sup> See ROBERT 1878. The comparison includes his edition of the *Epitome*; the Greek *scholia* on the *Phaenomena* (relying on Venice, Biblioteca Marciana, Gr. Z. 476 [= 703] and Vatican, BAV, Vat. grec. 1307); the *scholia Basileensia*, the so-called *scholia Sangermanensia* (a.k.a. the *Revised Aratus Latinus*) and Hyginus. Robert was not yet aware of the *Fragmenta Vaticana*, which was first published in REHM 1899!

<sup>53</sup> Martin notes that Robert deletes a number of the Greek sources that appear exclusively in Hyginus, thus diminishing any sense of the latter author's independence from the rest of the printed texts. Martin calls this '*une pétition de principe*'. See MARTIN 1956, p. 64.

<sup>54</sup> The grammar seems to echo Pliny's assessment of the fictitious nature of some of Hesiod's assertions (*Naturalis historia*, VII, 48: *Hesiodus, qui primus aliqua de hoc predidit, fabulose /ut reor/ multa de hominum ævo praeferens; ... et reliqua fabulosius in phœnice ac Nymphis*; ed. and English transl. RACKHAM 1938–63, VII /1942/, pp. 608–09).

1. The largest number of co-incident citations (22) is shared by a group that comprises the *scholia Basileensia*, one or more versions of Eratosthenes and one or more members of the Greek *scholia* and its Latin translations – but omits the text of Hyginus (see lines 2, 7 and 8, but also the smaller groupings of 12, 13, 15 and 20). One caveat to this interpretation, however, is that half these coincidences (11) appear in the so-called ‘Invocation’ to the *scholia Basileensia*, which also appears to a greater and lesser extent in the Greek *scholia* and the *Aratus Latinus*,<sup>55</sup> but not in Hyginus or in the two extant version of the *Catasterisms*.<sup>56</sup>
2. If one discounts the ‘Invocation’, then the largest number of citations of the Greek authors (16) are shared amongst all seven sources (line 1), thereby largely supporting Robert’s instincts to see a high level of continuity amongst the texts.
3. There are numerous occasions in which the *scholia Basileensia* and Hyginus cite a reference that appears in only one of the two versions of the *Catasterisms* that have survived (lines 4, 6, 9, 11, 15 and 19). This data supports the suggestion that both authors had access to a version of the *Catasterisms* that was a more complete version than the ones we have inherited. A more detailed comparison between the texts of the *scholia Basileensia* and the *De astronomia*, however, reveals a sufficient number of divergences to suggest that they did not consult an identical version of ‘Eratosthenes’.<sup>57</sup> In any event, both appear to have relied directly on a text attributed to Eratosthenes and not upon the significantly edited ‘*manuel d’astronomie élémentaire et littéraire*’ posited by Martin.<sup>58</sup>
4. There are eight examples in which information appears in the *Epitome* and/or the *Fragmenta Vaticana* and the Greek *scholia* and its Latin translations, but does not appear in either the *scholia Basileensia* or Hyginus. Again, this suggests an independent line of transmission between an Eratosthenian model and this branch of its descendants.

<sup>55</sup> Curiously, the ‘Invocation’ does not appear in the known manuscripts of the *Revised Aratus Latinus*. I leave it to others to argue whether or not this proves conclusively that the *Aratus Latinus* and the *Revised Aratus Latinus* were actually derived from independent versions of the Greek *scholia*.

<sup>56</sup> Martin believed that the invocation to the commentary (*Morceau VIII*) was integral to the Greek corpus of texts. For reasons not altogether clear, Le Bourdellès rejects this, claiming that there is no evidence for the text, despite citing the passages cited by Maass in his footnote. See MAASS 1898, pp. 177; MARTIN 1956, pp. 142–50 and LE BOURDELLÈS 1985, p. 44. For additional thoughts on this issue, see p. 302 below.

<sup>57</sup> To this end, see Martin’s examination of the 21 instances in which Hyginus cites Eratosthenes as a source and his conclusion that the work that there was, indeed, a text that circulated under the name of ‘Eratosthenes’, which contained a selection of myths that were accompanied by star catalogues. See MARTIN 1956, pp. 95–103. In striking contrast, the *scholia Basileensia* mentions Eratosthenes as a source only twice – in the descriptions of Taurus and Aries.

<sup>58</sup> MARTIN 1956, p. 12.





Fig. 11: Taurus and Cepheus. Basel, Öffentliche Bibliothek der Universität, Ms AN. IV. 18, ff. 23v–24r

5. And, finally, there are twelve instances in which the *Epitome*, *Fragmenta Vaticana* and the *scholia Basileensia* share a citation with the two versions of the *Aratus Latinus* without the apparent intermediary of the *Greek scholia*. This detail should prompt modern scholars to accept that it might be time to re-open a discussion of what the Greek model of these so-called Latin translations might have contained.

One final observation that is not brought out by this type of analysis, however, is the manner in which all the descriptions that appear in the *scholia Basileensia*, the *Greek scholia* and the two versions of the *Aratus Latinus* share a cautious approach to their respective models. For example, the scholiast's citations from Eratosthenes and, presumably, Nigidius Figulus, show that he was a careful transcriber of information.<sup>59</sup> There is also the sense that he

<sup>59</sup> Note a similar observation by Le Bourdellès, who comments on how the scholiast even appears to reproduce the incorrect syntax of his model. See LE BOURDELLES 1985, p. 29.

either did not have access to a large library or he did not feel that it was his place to expand upon the opinions offered in his two main sources. Hyginus, on the other hand, is less assiduous, but more creative in his citations of Eratosthenes – often adding colourful details and descriptions to enliven the text. Also, he evidently had easy access to a well-stocked library (witness his citations of over 50 Greek authors that are not mentioned by any of the other comparable texts) as, indeed, would be befitting for the man who has been identified as the Keeper of the Palatine Library during the reign of Augustus Caesar.<sup>60</sup>

Whereas more work could be done to ‘crunch’ these numbers, it is worth remembering that the reduction of such information into a numerical format does tend to generate a series of what one might ‘false positives’.<sup>61</sup> The purely quantitative documentation often obscures the more subtle connections between these sources – such as the example of Hesiod cited above, where the extent of the information conveyed by the *scholia Basileensia* is closest to that which appears in Hyginus, despite the fact that the reduced numerical table shows them to share only five exclusive concordances. Additionally, it is worth noting how the extent and quality of the citations appears to degrade as the centuries pass. For example:

- the citation of Crates in the *scholia Basileensia* and the Greek *scholia* becomes ‘*Socrates poeta*’ in the *Aratus Latinus*; Sophron becomes ‘*Sobrius*’ and Cratinus becomes ‘*Crates poeta*’
- Zenodotus Aetolus in the *scholia Basileensia* does not appear in the Greek *scholia*, but is transformed into two people (*Zinodotus et Aetolus*) in the *Aratus Latinus*
- The title of Aglaosthenes’ work, *Naxica*, is lost and Epimenides’ work on Crete becomes the location for the myth in the description of Capricorn in the *Aratus Latinus*
- the citations of Pisandrus Rhodius and Musaeus that appear in the Greek *scholia* are lost in the *Aratus Latinus*.

In addition to this, a further 13 references to the Greek authorities are lost between the composition of the *Aratus Latinus* and the later translation of the *Revised Aratus Latinus*.<sup>62</sup>

<sup>60</sup> For a summary of the relative strengths and weaknesses of this identification, see CARCOPINO 1963, LE BŒUFFLE 1983, pp. xxxi–xlvi and Piacente in VITABELLO 1988, pp. vii–xi.

<sup>61</sup> Jordi Pàmias has pointed out to me that, purely terms of *Textkritik*, the significant data lies in the *errores separativi* and *coniunctivi*. The fact that Panyasis is mentioned in chapter 4 of the *scholia Basileensia* and not in the *Epitome* shows that the former did not draw from the latter. The example of Aglaosthenes (instead of Eratosthenes) in chapter 30 points in the same direction. The fact that both *scholia Basileensia* and Hyginus read Aglaosthenes here does not suggest either a common origin or that one has drawn from the other, however [personal communication, March 2019].

<sup>62</sup> Hesiod (in Bootes and in Virgo), Eratosthenes (Taurus), Aratus and Euripides (Pegasus), Aeschylus (Perseus and Lyra); Hipparchus and one of the two references to Aratus (Pleiades),

The second set of data collected here concerns the star catalogues (Appendix 4). Despite the painstaking analyses and resulting observations of previous scholars concerning the origin, dates and context of the stars catalogues that one finds appended to the catasterismic myths,<sup>63</sup> it is always worth reiterating a warning about the inevitable pitfalls one encounters as part of this process. First and foremost, one needs to stress the extent to which the information contained in these star catalogues is ripe for error. Long lists of similarly-worded descriptions with numbers expressed as Roman numerals are a trial for both the reader and the copyist. The mind and hand are almost compelled to stray. Lines are jumped; pen-strokes are mis-counted.

Having said that, successive generations of modern editors have gone a long way towards resolving most of the scribal inconsistencies found in the relevant manuscripts into a convincing form. But, the second major obstacle in assessing these star catalogues is the fact that (as mentioned) unlike Ptolemaic astronomy, in which these descriptions can be checked against observable phenomena using verifiable mathematical co-ordinates, the star positions in the catalogues deriving from the Aratean tradition are described simply in terms of their placement in the imagined body of a mythological figure. There is no external authority against which one can test this information. Editors may have homogenised this material so that the modern reader feels a sense of trust in the 'authority' the text, but when one compares the lines in which the total numbers of stars in each constellation is listed in Appendix 4, it is disconcerting to note the preponderance of examples in which the actual sum of stars mentioned by a given author and the totalled amounts that are proposed in the last line of the catalogue are radically different. Stars have gone missing and stars have been added – but how can one tell which stars these are or understand why or how they have been changed?

Finally, the description of a star in terms of where it is located on the body of the constellation presupposes an image and, as recent studies of the changing forms of early constellation imagery have demonstrated, a picture – subject to the whims of changing artistic styles – is not always an ideal place to encode scientific information.<sup>64</sup>

The majority of the philologists working on these texts ignore the fact that, even though only an extremely limited number of images of the constellations have either survived from Antiquity or can provide a window into what earlier images may have looked like (such as, for example, the strong sense of a Classical model in the illustrations in the Leiden *Aratea* or in the Cicero manuscript, London, BL, Harley Ms 647), each individual example is

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Homer (Aquarius), Epimenides (Capricorn), Heraclides (Sagitta), Sophocles (Cetus) and Ctesias (Piscis Austrinus).

<sup>63</sup> Most notably MAASS 1883, MAASS 1898 and MARTIN 1956. See also the comments above, n. 14.

<sup>64</sup> See, for example, LIPPINCOTT 2009 and ZUCKER 2017. Indeed, Guidetti has recently suggested that the Roman versions of the constellation illustrations 'originally were not meant to have any scientific value at all', but were 'created as prestigious luxury items for wealthy patrons, not as study tools for scholars'. See GUIDETTI 2018, p. 74.

radically different from the others. It seems fairly certain that, whereas we might accept the suggestion that Aratus (and, presumably Eudoxus),<sup>65</sup> used a celestial globe during the preparation of his *Phaenomena*, we have only the vaguest idea of what the constellations on that globe may have looked like – based in large part on Hipparchus’s observations of the astronomical ‘errors’ contained within Aratus’s poem.<sup>66</sup> Equally, it may be one thing to claim that the corpus of images we have inherited all stem from a model that cannot predate the 3rd century AD,<sup>67</sup> but is that model reflected most accurately in the pictures preserved in the Leiden *Aratea*, the Harley Cicero manuscript or in the Germanicus manuscripts in Basel or Madrid?<sup>68</sup>

To return to the questions surrounding the star catalogues, given that the general consensus is that they are inseparable from the depictions of the constellations<sup>69</sup> and the possibility that the lists themselves are merely descriptions of a set of images in which the stars were marked, as such, their context *de facto* should be seen as primarily pictorial and not – strictly speaking – astronomical. The format from which these images were derived or transcribed remains unclear: it may have been a celestial globe, or a map, or, even, a se-

<sup>65</sup> As Dekker points out, the fact that Eudoxus describes the constellations in terms of their positions relative to the celestial colures – features that are absent from the night sky – supports the thesis that he must have used a three-dimensional model of the heavens, such as a celestial globe, as the basis for these descriptions. Dekker has also argued that the best surviving records of what the structure of a Eudoxan/Aratean globe may have been are preserved in the celestial hemispheres in Aberystwyth, NLW, Ms 735C (f. 5r) and Monza, Biblioteca Capitolare, Ms B 24/163 (228) (f. 67r), both of which show the colures passing through the middle of the constellations. See DEKKER 2009 and DEKKER 2013.

<sup>66</sup> With regard to Hipparchus’s commentary, see DEKKER 2008, where she makes the hitherto unrecognised discovery that many of the so-called ‘errors’ cited by Hipparchus are due to what appears to be his misunderstanding or, perhaps, ignorance of how Eudoxus and Aratus divided the heavens. The measurements described by Eudoxus and Aratus rely on a system in which the colures passed through the middle of the *constellations* or Aries, Cancer, Libra and Capricorn (see n. 65, above). Hipparchus, however, uses one that places the colures at the beginning of those *signs* (or what Dekker calls the Ari-0° convention). If, rather than assuming that Eudoxus and Aratus used the Ari-0° convention as Hipparchus seems to have done, one rectifies these two sets of data to a single one, the number of so-called ‘errors’ in the Eudoxan/Aratean descriptions is significantly reduced.

<sup>67</sup> MARTIN 1956, p. 32.

<sup>68</sup> As Guidetti notes, in the 8th century, ‘at least four illustrated astronomical books were available in early medieval France: three of them were written in Latin and one was in Greek’. See GUIDETTI 2018, p. 68. His *stemma* on pp. 70–71 suggests that these would be a Greek edition of the *Phaenomena* with a Greek commentary (presumably derived from Martin’s  $\varphi$ ); a copy of Germanicus’s Latin translation of the *Phaenomena* without the commentary (the ‘Z family’), Germanicus’s poem with the commentary (‘O family’) and Cicero’s *Aratea* with text taken from Hyginus. The evidence from the surviving manuscripts of these texts is that the illustrations of each is significantly different, thus positing *at least* four different parallel iconographic traditions that were potentially available to illuminators.

<sup>69</sup> Guidetti makes the very neat observation with regard to the Cicero manuscript (London, BL, Harley Ms 647): ‘This special arrangement of text and image reaches its climax with the Harley manuscript, where text and image become one and the same thing... while Cicero’s verses are placed under the image, again as a sort of caption’. He also notes that the positions of the stars have a ‘noteworthy degree of exactitude’ – though it should be mentioned that this is an exactitude to the accompanying text and not to the observed (astronomical) positions of the stars in the night sky. See GUIDETTI 2018, p. 77.

ries of independent, single-sheet pictures, such as seems to have been preserved in the pages of the Leiden *Aratea* and, in a slightly different format, in the 'picture catalogue' that accompanies the *Fragmenta Vaticana*.<sup>70</sup> Regardless, though, once these images left the strict confines of an astronomical context, their value as scientific records decreased in direct ratio to the increase in their value as 'illustrations'. Perhaps the best caveat concerning this whole enterprise appears in the Greek scholiast's complaint, which is recorded in the 11th-century version of his text in the Biblioteca Marciana:

Ὅμηρον μὲν ἓν εἶδος γραφέων βλάπτειν τῶν Βιβλιογράφων. Ἄρατον δὲ δύο βιβλιογράφων τε καὶ ζωγράφων, ὧν τὰ ἀμαρτήματα τῶν Ἀράτου θεωρημάτων ἐγκλήματα ποιῶσιν οἱ κυφότεροι διὰ τὴν κυφότεροι τοῦ παντός λόγου καὶ τῆς ἀληθείας.

('Homer is attacked only by a single type of stylus, those of the scribes; but Aratus has two against him, those of scribes and those of draughtsmen, whose propositions are transformed by these lightweight spirits into accusations against the ideas of the poet, because they ignore both the general sequence of the text and the actual reality of the facts'.)<sup>71</sup>

It is most likely that the myriad of variant images that we have inherited owe a greater debt to the fantasy – or, perhaps, it might be kinder to say 'creativity' – of the artists of the 1st, 2nd, 3rd and, possibly, 4th centuries AD than to Aratus, Hipparchus, Ptolemy or any visible phenomenon in the night sky.

Given this possibility, one is faced with two choices: to read the information supplied in the star catalogues solely in terms of text – that is to say, that one sees it as the collation of purely philological data – or, to consider this information as providing clues to a much-transformed but possibly recognizable pictorial tradition.<sup>72</sup>

As my predilections and skills as an art historian heavily outweigh those as a philologist, I tend to see the issue of the star catalogues as an art historical

<sup>70</sup> Vatican, BAV, Vat. grec. 1087, ff. 300v–308r and 309v–310v. Indeed, if one considers the way in which the more detailed images in the manuscript could be used in conjunction with the depictions of the planisphere and hemispheres (despite their pictorial differences) to create a credible rendering of the heavens, one can see the makings of a fairly useful model-book here. The key component that is missing from this particular formula, however, is the rendering of the stars on the figures themselves, abetted by the fact that the star catalogues in the *Fragmenta Vaticana* are riddled with lacunae and errors. See PAMIAS – ZUCKER 2013, p. 5, n. 20. Similarly, with a bit more imagination, one can also envisage how the more degraded planisphere and constellation pictures (with stars) in the Basel Germanicus might also dimly reflect a similarly practical model-book.

<sup>71</sup> Venice, Biblioteca Marciana, Gr. Z. 476 (= 703). First published by MAASS 1898, p. 329 and repeated and translated into French by MARTIN 1956, p. 32. Note the similar comment bemoaning the errors introduced into the text made by Achilles (as in n. 19 above).

<sup>72</sup> In this context, it is important to recognise Dekker's recent analysis of the positions of the stars in the Leiden *Aratea*, which appear to show the influence of descriptions based on a Ptolemaic star catalogue (but not on the mathematical co-ordinates), and, therefore, exist outside this immediate tradition. See DEKKER 2010.

problem, and, for this reason, I have grouped the descriptions in **Appendix 4** into 'general locations', so that it is possible to encompass what might have been slight variances in the way in which a star is described within a generic area of the body. For example, philologically, the description of the three stars 'on the tail' of Ursa Maior (given by Eratosthenes, Hyginus and the *scholia Basileensia*) is not the same as those that describe the three stars as being 'above the hind part' of the Bear (as in the *Aratus Latinus* and *Revised Aratus Latinus*). Depending on how one imagines the shape of the Bear's tail, however, it is quite possible that both sets of texts are referring to the same group of stars [Figs 12 and 13]. Similarly, there are several instances in which Hyginus seems to transpose 'left' and 'right' co-ordinates in his descriptions. The most likely reason behind this discrepancy is that Hyginus's descriptions rely on his consultation of a celestial globe in which the so-called 'Hipparchan rule' had been observed.<sup>73</sup> That is to say, that rather than relying on a direct observation of the night sky (where the figures of the constellations are assumed to face the viewer in the so-called 'sky view'), Hyginus used a globe in which the figures were presented with their backs to the viewer.<sup>74</sup> As such, notations referring to their right/left orientation would have been reversed from the Aratean convention, in which the constellations tend to be described as they appear in the night sky.<sup>75</sup> For the purposes of the present study, therefore, these stars have been grouped as likely correspondents.

If one allows for a very large degree of latitude, it would seem that the contents of the star catalogues – as with the catasterismic myths – are surprisingly consistent across the range of cited texts. If one probes slightly further, however, discrepancies do appear. In particular, there seems to be a notable shift between the information provided in the texts of the *Catasterisms*, the *scholia Basileensia* and (given his apparent idiosyncracies) Hyginus and that which is listed in the *Aratus Latinus* and *Revised Aratus Latinus*. This is not always apparent in the total stars recorded for each constellation figure, but does appear, along with the devil, in the details. For example, if one takes the stars in the head of Ursa Maior, one sees a total of 7 stars in head in the CAT/

<sup>73</sup> For the best resumé of the 'Hipparchan rule', see DEKKER 2010, pp. 20–24 and DEKKER 2013, pp. 34–38.

<sup>74</sup> It is worth noting that the descriptions found in the Greek *Epitome* and *Fragmenta Vaticana* suggest that the descriptions of Eratosthenes were similarly based not on his observation of the heavens, but – in his case – on a set of illustrations that accompanied the text (see n. 23, above).

<sup>75</sup> On the probability that Hyginus used a celestial globe to compile his catalogue, see DEKKER 2013, pp. 80–84. This is particularly clear from Hyginus's use of celestial circles in his descriptions of Cygnus and Hercules, which, of course, are not visible to the observer of the night sky. One should also heed his advice that it is impossible to understand the phenomenon of day and night or the risings and settings of the signs throughout the year without the aid of a celestial globe. See Hyginus, *De astronomia*, IV, 9: *Sed aliter esse ex ipsa sphaera intelligere licebit* ('... but it is the sphere itself that allows us to understand the difference') and IV, 10, 2: *... quid de reliquis signis sine sphaera possit intellegi* ('... for how can one comprehend the positions of the other signs without a sphere?'). Ed. and French transl. LE BŒUFFLE 1983, pp. 126 and 127, both cited by DEKKER 2013, p. 80.

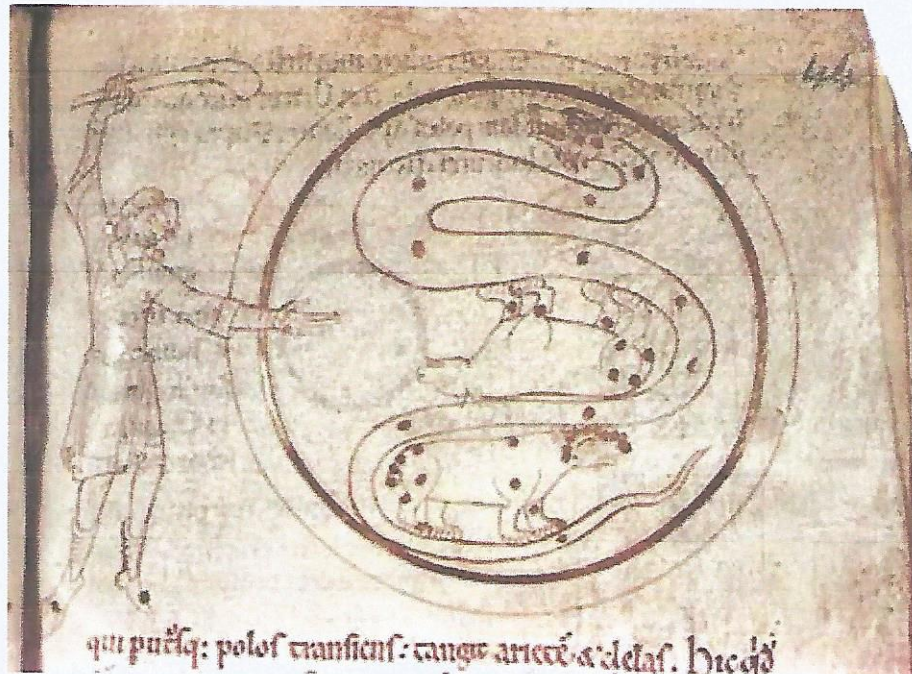


Fig. 12: Bootes with Draco inter Arctos (Ursa maior at bottom). Oxford, Bodleian Library, Ms Digby 83, f. 44r



Fig. 13: Ursa maior. Paris, BnF, Ms lat. 14754, f. 229v

HYG/BAS tradition, but only 6 in the AL/RAL list. In the foot-area of Ursa Maior, there seem to be 6 stars in the CAT; 4 in the foot-area in the HYG and BAS and only 1 in the AL/RAL tradition. With Hercules, CAT/HYG/BAS list 4 stars in the lion's skin, but AL/RAL have none. With Virgo, CAT/HYG/BAS have a total of 6 stars in the shoulder-wing area, while AL lists 3 and RAL lists 4. The Twin closest to Cancer loses the stars in his feet in the two AL/RAL texts, and the other Twin loses the stars in his elbows and/or hands and Propous, the bright star in his left foot. Even when all the sources agree that the constellation of Leo should have 19 stars, AL/RAL seem to lose the descriptions for 6 of these. Using this admittedly rough yardstick, then, it seems that both the *Aratus Latinus* and the *Revised Aratus Latinus* show a worrying trend for misplacing stars – not necessarily always in the proclaimed totals, but in the long and somewhat repetitive lists of the individual stars themselves. Finally, it does seem curious that only the star catalogues of the *Catasterisms* maintain a strict correlation between the number of stars described and the number listed in the respective totals for each constellation. Whether this reflects an unsullied textual tradition or the brilliant editing of later scholars remains open to closer scrutiny.<sup>76</sup>

As mentioned above, the content of the *Catasterisms* has survived in several different formats and contexts during the Classical and early Medieval periods; and the exact form in which the author of the *scholia Basileensia* encountered Eratosthenes's text is the subject of on-going debate. Nonetheless, there are five aspects of the *scholia Basileensia* that seem fairly certain:

The first is the strong likelihood that scholiast's version of the *Catasterisms* was a more complete version of the text than we have inherited in the surviving versions of the *Epitome* and the *Fragmenta Vaticana*. For example, if one tracks the parallels between the citations of Greek authors in the *scholia Basileensia* with those that appear in the *Epitome* and the *Fragmenta Vaticana*, there are 55 occasions in which the name of the author is mentioned by all three sources [see **Appendix 2** and **3**]. In ten cases, however, the authors cited in the *scholia Basileensia* appear only in the *Epitome*, and, in four instances, they appear only in the *Fragmenta Vaticana*. These divergences point to the scholiast having possessed a fuller version of the text of the *Catasterisms* than is represented by either version that survives today.

The second is that the scholiast had access to a Greek version of Eratosthenes's text and did not rely on a Latin intermediary.<sup>77</sup> This is supported by the fact that the scholiast includes a number of Greek words and citations in

<sup>76</sup> For example, Jordi Pàmias has pointed out to me that the version of the *Epitome* that has survived derives ultimately from the *de Planudean recensio* (Edinburgh, Adv. 18.7.15, ca. 1290), from which it is evident that Planudes has intervened intensively in the textual tradition [personal communication, March 2019].

<sup>77</sup> That is to say, the author had access to the 'φ edition/s' of Aratus, which included the catasterismic extracts and possibly in a more complete version than the one that has come down to us via the *Epitome* and *Fragmenta Vaticana*. This observation was first made by REHM 1896, p. 15. The same point has been made about Hyginus's use of a Greek original. See BURSIA 1866, esp. pp. 765 ff. and MARTIN 1956, p. 59.



his text, which are presented either in the Greek orthography or in transliteration.<sup>78</sup> All these passages were later fully Latinised by the authors of the *Aratus Latinus* and the *Revised Aratus Latinus*.

In line with the previous two observations, the third is that, if one compares the details of the text of the *scholia Basileensia* with similar passages in Hyginus and the 'Alexandrian compilation' and its Latin descendants, the degree of concordance between the *scholia* and Hyginus is noticeably higher than with either the surviving Greek *scholia* or the Latin translations, but there are a sufficient number of discrepancies across the board to argue that each of these represents an independent transmission from the 'Alexandrian compilation'.

There is one key feature, however, that is shared by the *scholia Basileensia*, the Greek *scholia* and the *Aratus Latinus*, but does not appear in those works not directly connected to the structure of the *Phaenomena* – that is, the *De astronomia* of Hyginus and the two surviving variants of the *Catasterisms*, the *Epitome* and *Fragmenta Vaticana*.<sup>79</sup> This is the commentary on the so-called 'Invocation', which must have been inherited from the body of texts that made up the 'Alexandrian compilation'.<sup>80</sup> The fact that the commentary in the Greek *scholia* is it significantly shorter and is noticeably rougher in the *Aratus Latinus* would seem to suggest that – once again – the *scholia Basileensia* preserves a version of this text that is more complete and more reliable than that found in the descendants of the 'Φ edition/s'.

Intriguingly, the illustrations that tend to accompany the 'Invocation' (the so-called 'author portrait' and the image of Zeus riding on his eagle) do not appear in all the recensions and/or later adaptations of the *scholia Basileensia*.

<sup>78</sup> Despite the scholiast's proficiency in Greek, the success with which the later Latin scribes render many of the Greek words and phrases is mixed. The attempts can be seen in the variant readings provided in DELL'ERA 1979, esp. pp. 315–16, 320, 327, 328 and 332–36. To this, one might add the readings in the manuscript in Aberystwyth (National Library of Wales, Ms 735 C), which Dell'Era seems not to have known. The scribe of the manuscript fairly successfully transcribes the Greek used to describe the Aselli on Cancer's shell (Ὀνοῦς / ONOYC) and the rain from which the Hyades derive their name (ὑεῖν / YEIN). He also offers convincing transcriptions for the star on Leo's back (ισχίω / inschium) and the tumbling posture of Cassiopeia (ἀνακλίτω / anaclito) and the back of Taurus (ῥάχις / trachis). He starts to fall apart, however, when confronted by the knee of Hercules (εἰς γόνατος/entonatos); the star in front of one of the Gemini's foot (Πρόπους / Ponore); the heritage of Berenice's Hair (Ἐπεργέτιδος / erepsenaoc) and the alternate name for Jove as the bearer of the goatskin (Αἰγίοχος / Aiochus). Further, he omits any mention of Virgo's star (Προτοσυγήτηρ) and the Haedi (Ἡνώχου) altogether. For a fuller transcription of these passages and those accompanying the invocation to the poem, see LIPPINCOTT 2019.

<sup>79</sup> Given its subject matter, there was no call for this material to have appeared in the early versions of the *Catasterisms*. It is, however, a vital witness to Greek thinking about the *Phaenomena* and its philosophical context. For the early philosophical discussions about the *Phaenomena*, and, in particular, the role of Jupiter in the governance of the skies, see MARTIN 1956, chapter 2 and p. 271 above. As mentioned above, however, the commentary on the 'Invocation' does not appear in the known manuscripts of the *Revised Aratus Latinus*. The reasons for this are unclear.

<sup>80</sup> *Quaeritur: quare ab Iove coepit et non a Musis ut Homerus? – rationabiliter et omnium parens adfirmatur et non solum hominum, sed etiam deorum.*

For example, the images do appear alongside the *scholia Basileensia* in Aberystwyth 735C and with the *scholia Stroziana* in Madrid 19, but they do not feature in the Basel manuscript from which the *scholia* have derived their name. Having said that, though, it is worth pointing out that there are at least five-and-a-half blank pages preceding and surrounding the text and commentary of the 'Invocation' in the Basel manuscript, which would have been more than ample to carry the additional maps and/or illustrations which have been included in the Aberystwyth manuscript.<sup>81</sup> Thus, one could argue that even though the 'Invocation' in the Basel manuscript lacks the accompanying images, the model from which it was derived may well have contained them.

The final point worth mentioning is the degree to which the author of the *scholia Basileensia* has attempted to create a text focussing specifically on the Greek heritage of the celestial myths. This is brought out most starkly by the fact that, amongst the authorities that he cites, 28 of these are Greek and only two references are to Latin authors.<sup>82</sup>

As mentioned, the two Latin authors cited in the *scholia Basileensia* are Ovid and Nigidius Figulus. The reference to Ovid is curious. It appears in the description of Ursa Maior: *Ovidius a Junone ob pelicatum in ursam transfiguratum eam scribit* ('Ovid writes that she [Callisto] was transformed into a bear by Juno because of cohabitation [with Jove]')<sup>83</sup> – and captures information that appears in both Ovid's *Metamorphoses* and *Fasti*.<sup>84</sup> Its placement in the first set of descriptions, as well as its cursory and somewhat abrupt nature, could well indicate that it is not a part of the original *scholia*, but is a later addition, occasioned – perhaps – by the absorption of what had originally been a marginal notation. Be that as it may, the citations of Nigidius Figulus are of a very different scope.

<sup>81</sup> The lower part of f. 7v is blank (preceding the text: *Involutio sphaerae. Hic est stellarum...*), as is f. 10r–v, the bottom half of f. 11v (where a hasty sketch of a male head in profile has been added) and f. 12r. The fact that the image of Jupiter on his eagle also appears in two of the three manuscripts from the Z-branch of the Germanicus tradition (Bern, Burgerbibliothek, Ms 88 and Boulogne-sur-Mer, Bibliothèque municipale, M. 188), as well as in Vat. grec. 1087 alongside the *Fragmenta Vaticana* – where, arguably – it has no reason to appear – seems another indication of the pervasive influence of the 'Alexandrian compilation' and its pictorial tradition/s. For a discussion, of this particular image, see GUIDETTI 2013 and LIPPINCOTT 2019, pp. 227–28, 230 and 253–54. It might also be worth mentioning that the image from Vienna, ÖNB, Cod. 2352 (f. 1r), reproduced by Maass and described as illustrating Aratus and his Muse (MAASS 1898, p. 174), is actually the frontispiece of a Michael Scot manuscript and depicts two male figures. Presumably, the balding male figure to the right is intended to be an author portrait of Michael Scot himself.

<sup>82</sup> The Greek authors are: Aeschylus, Aglaosthenis, Amphis of Athens, Aratus, Aristomachus, Aristotle, 'Artemidorus', Callimachus, Crates of Thebes, Cratinus of Athens, Diodorus Siculus, Epimenides, Eratosthenes, Euripides, Herodotus, Hesiod, Homer, Musaeus of Athens, Myrsilos Methymnaeus ('Myrtilus'), Panyasis of Halicarnassus, Pherecydes of Athens, Philiscus of Aegineta, Pisandrus of Camirus/Rhodes, Sophocles, Sophron of Syracuse, Sosithus, Zenodotus Aetolus, and 'the author of the Cretica' (Epimenides of Knossos). The two Latin authors are Nigidius Figulus and Ovid.

<sup>83</sup> See ed. and English transl. LIPPINCOTT 2019.

<sup>84</sup> Ovid, *Metamorphoses*, II, 466–84 and *Fasti*, II, 177–82.

The Roman Republican Publius Nigidius Figulus (c. 98–45 BC) was one of the foremost intellectuals of the mid-1st century BC, regarded by contemporaries to be the equal of Cicero and Varro for his erudition.<sup>85</sup> The titles of his works that have come down to us show an immense range of interests, with volumes on *De sphaera Graecanica*, *De sphaera barbarica*, *De diis* and the multi-volume *Commentarii grammatici*, which focussed on juxtaposing grammatical and antiquarian subjects. In the *scholia Basileensia*, he is a significant presence, being named ten times as the source for a set of extended discussions of the catasterismic myths of the zodiacal constellations, the details of many of which do not appear in other mythological sources.<sup>86</sup> The very precise way in which these stories have been conveyed suggests that, as with the stories from Eratosthenes, these excerpts have also been quoted nearly verbatim by the scholiast.<sup>87</sup> The cause for circumspection in this case is due to the fact that almost all of what has survived of Nigidius Figulus's writings on the heavens has been preserved solely through the citations that appear in the *scholia Basileensia*.<sup>88</sup> The exact source from which the scholiast drew his excerpts from Nigidius Figulus remains unknown – though one can surmise that these excerpts point to a work that focussed exclusively on the mythology of the zodiacal constellations, which itself was heavily influenced by early Greek or Greek-influenced sources in that it omits Libra from the list of constellations.

One possibly mysterious aspect of the *scholia Basileensia* is that the name of Hyginus is never mentioned.<sup>89</sup> On the one hand, one could imagine that our scholiast may have felt that it was inappropriate to cite Hyginus – given the different nature of his enterprise of poetic exegesis against the more generally educational aims of *De astronomia*. If that were the case, however, one would then have to posit that Nigidius Figulus's lost treatise on the zodiac signs was considered to be integral to the Aratean tradition (perhaps as a variant of Eratosthenes's mythographic chapters) and, therefore, its inclusion was acceptable.<sup>90</sup> On the other hand, the failure to cite Hyginus might

<sup>85</sup> For additional information, see SWOBODA 1889/1964 and LE GRAND 1931.

<sup>86</sup> Nigidius provides mythological information for Scorpio, Virgo, Gemini, Leo, Taurus, Aries, Pisces, Aquarius, Capricorn and Sagittarius. The reason he is not cited in the description of Cancer might be due to the fact that the constellation forms part of a joint description with Gemini. The absence of Libra from this list probably reflects the fact that Nigidius, following the earlier Greek convention, saw it as part of the constellation of Scorpio.

<sup>87</sup> For a discussion of the works of Nigidius Figulus, see CONTE 1987/1994, p. 220.

<sup>88</sup> See SWOBODA 1889/1964 and LE GRAND 1932. It is worth reiterating that Nigidius is not mentioned in the Greek *scholia*, nor in the *Aratus Latinus* or *Revised Aratus Latinus*.

<sup>89</sup> This is particularly perplexing given that there are a number of versions of the myths given in the *scholia* that do not appear in *De astronomia*, but can be found in Hyginus's *Fabulae*. These include the opinion on the etymological origins of the name of the Hyades from the Greek ὑεῖν ('to rain') from *Fabulae* 192; the identification of Draco as the snake thrown by the Giants at Minerva from *De astronomia*, II, 3 and the reference to Callimachus in *De astronomia*, II, 33. Also, the fuller descriptions of the histories of the planet-gods are closer to Hyginus, *De astronomia*, II, 42.

<sup>90</sup> It could even be that Nigidius Figulus's text became a 'late entry' into the ancillary material circulating as the 'Alexandrian compilation'. If that were the case, does its unique appear-

indicate that the anonymous scholar who composed the *scholia Basileensia* was simply unaware of the existence of his work. Were this the case, it then prompts a number of questions as to how this may have come about. Given the previously-mentioned chronological parameters dictated by the text itself, the general consensus amongst scholars is that he compiled his notes sometime during the 3rd century. One can imagine, then, a scholar with good Greek language skills, who had access to a Greek version of the *Catasterisms* – derived, arguably, via the ‘Alexandrian compilation’, along with a version of the commentary on the ‘Invocation’ to the *Phaenomena* – and to a Latin text on the mythography of the zodiacal constellations by Nigidius Figulus, but not to Hyginus’s *De astronomia*. Such a scenario might pertain to an author working some distance from Rome or a similarly large library elsewhere in the Roman Empire, or it might indicate a dip in the availability or popularity of Hyginus’s text. Whether one opts for omission, commission or circumstance, each imagined scenario raises a series of interesting possibilities.<sup>91</sup>

Taken as a whole, then, these elements of the *scholia Basileensia* evoke the image of an author who is a well-educated in Greek and who has decided to bring together a series of Greek myths and translate them into Latin in order to provide the perfect Latin accompaniment for Germanicus’s Latin verse translation of Aratus’s poem. In this respect, the *scholia Basileensia* seems not to reflect an attempt to provide an up-to-date scholarly compendium of the available ancillary material on the constellations that must have been available in both Greek and Latin; nor is it intended as an introduction to astronomy as a whole – as, arguably, Hyginus’s *De astronomia* sets out to achieve. Its aim is much more modest: either the intent was to provide a select Latinised compilation of predominantly Greek literary sources to accompany a Latin translation of a Greek poem, or it reflects the similar efforts of a scholar who, for whatever reason, only had two books to hand: a Greek version of Eratosthenes derived, presumably, from the ‘Alexandrian compilation’ and a copy of a zodiacal treatise by Nigidius Figulus. Nevertheless, it seems fair to say that both Germanicus and the scholiast seem to have been motivated by the same ambition: to make the rich tradition of Greek astronomical lore more accessible to a Latin audience. Or, as might be phrased within the context of current ways of thinking about these issues: the composition of both the Latin

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ance in the *scholia Basileensia* indicate yet another instance in which the *Basileensia* reflects a more complete version of the texts inherited from that tradition, or could its absence from the texts deriving from the ‘Φ-edition/s’ be the result of a conscious censoring on the part of the authors of the Greek *scholia* and its Latin derivatives?

<sup>91</sup> On the apparent availability of Hyginus’s text in the early 6th century, see n. 33, above. One slim possibility, of course, is that the author of the *scholia Basileensia* either predates or was an elder contemporary of Hyginus (which, if one accepts that the citation of Ovid is spurious /see p. 303/ might be possible). If so, that might make the citations of Nigidius Figulus more comprehensible.

*Aratea* and the *scholia Basileensia* could be seen as conscious and, arguably, well-intentioned acts 'cultural appropriation'.<sup>92</sup>

The preceding examination of the *scholia Basileensia* reinforces the idea that, amongst all the various *stemma* that have been proposed by scholars to explain how the *Phaenomena* of Aratus and its 'fellow travellers' evolved throughout their various Greek and Latin iterations, the one that seems most plausible is the one published by Le Bourdellès in 1985, which is based on the belief that there must have been multiple avenues by which the ancillary information first attributed to Eratosthenes reached the Latin West [Fig. 14].<sup>93</sup> The only changes one might suggest would be that 1) Le Bourdellès's description of the *Corpus commentariorum in Aratum* should be placed as a subsequent stage to the very early versions of the text that either pre-date or are significantly more complete than the edited version of the *Catasterisms* that appears in the so-called 'Alexandrian compilation'; 2) that the branch indicating that the *scholia Basileensia* acted as an intermediary between the *Aratus Latinus* and the *Revised Aratus Latinus* be reconsidered. For whereas the quality of the Latin may have improved in this second translation, the text itself is much shorter. It lacks the 'Invocation' and – as mentioned above – the range of its Classical allusions is significantly diminished. It has been argued that the translator of the *Revised Aratus Latinus* simply deleted Greek words and phrases he did not understand.<sup>94</sup> If the author of the *Revised Aratus Latinus* had access to a Latin source that provided transliterations of all these missing authors, however, there would not have been cause to delete them. Moreover, if he knew of a Latin translation of this material that was as competent as the *scholia Basileensia*, where was the merit in making a new and less complete version of the text?

The final 'fellow traveller' accompanying Germanicus's Latin translation is the so-called *scholia Stroziana*, which appears in a number of manuscripts deriving from the copy that Poggio Bracciolini claimed to have discovered in Sicily sometime before January of 1429.<sup>95</sup> The text was certainly the most widely circulated of the *scholia* to Germanicus's poem, not only due to the myriad of manuscript copies of the text made during the 15th century, but also because it was amongst the earliest to be printed – the *editio princeps*

<sup>92</sup> Despite the arguable differences in overall intent, it is worth noting that Hyginus is also relentlessly Hellenophile in his citations. With the exception of one reference to his own work (... *de quo in primo libro Genealogiarum scripsimus*), Hyginus does not cite a single Latin author – though he does add over 50 additional references to Greek authors that are not found in any of the other versions of the catasterismic myths. The reference to his own work appears in Hyginus, *De astronomia*, II, 12 (ed. and French transl. LE BŒUFFLE 1983, p. 39).

<sup>93</sup> LE BOURDELLES 1985, p. 15.

<sup>94</sup> See the assessment in LE BOURDELLES 1985, pp. 71–72 and KIDD 1997, pp. 53–54.

<sup>95</sup> Florence, Biblioteca Laurenziana, Strozianus 46. For a discussion, see REEVE 1980, pp. 508–22, esp. pp. 511–17. Poggio refers to the manuscript in a letter of January 1429: *De Frontino, et frammento Arati, quod scribis, illi apud me sunt... Romae VI kal. Ianuarii 1429*. See TONELLI 1832, I, p. 304. See also, SABBADINI 1899, pp. 116–18 and SABBADINI 1914, II, pp. 85 and 203. As Reeve points out, there is no evidence that Poggio himself never travelled farther south than Montecassino. See REEVE 1980, p. 511, citing RESTA 1965, p. 401.

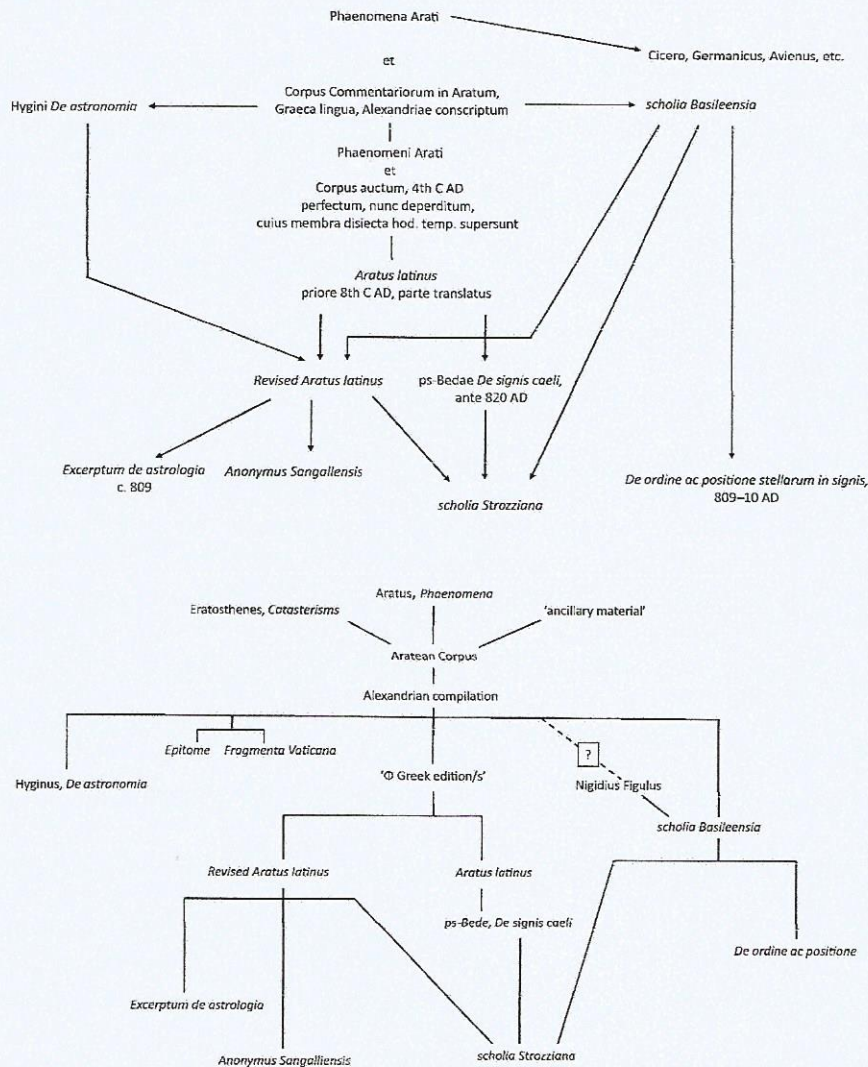


Fig. 14: The Aratean texts and their relationships: a) after LE BOURDELLÈS 1985, p. 15 (re-drawn) and b) proposed modifications

appearing as part of Antonio de Strata's 1488 Venetian edition of Aratean texts.<sup>96</sup> It also formed part of Aldus Manutius's influential compendium of astronomical texts printed in 1499.<sup>97</sup> The first modern edition was published

<sup>96</sup> *Rufi Festi Avieni interpretatio Phenomenorum Arati... item interpretatio per Germanicum et Ciceronem et Serenus de medicina*, Venice: Antonio de Strata 1488.

<sup>97</sup> *Iulii Firmici Astronomicorum libri octo... Marci Manilii Astronomicorum libri quinque, Arati Phaenomena Germanico Casesare interprete cum commentariis et imaginibus...*, Venice: Aldus Manutius, 1499.

by Breysig in 1867,<sup>98</sup> and this text was republished by Robert in 1878, who proposed that the *scholia* itself was actually amalgam between the *scholia Basileensis* and what he termed as the *scholia Sangermanensis*,<sup>99</sup> which Maass later identified as nothing other than the *Revised Aratus Latinus*, but lacking its ancillary accretions from Pliny the Elder, Martianus Capella, Fulgentius and Isidore.<sup>100</sup> Most recently, the *scholia* have been re-edited by Dell'Era in 1979, utilising the readings from three additional manuscripts.<sup>101</sup>

Given that this essay has already examined aspects of the two constituent texts of the *scholia Stroziana*, there are only two remaining observations that might merit mentioning. The first is the fact that, owing to its close connection with the book-hunting exploits of the early Italian humanists, it is often overlooked that the earliest appearance of the *scholia* is as part of the text found in the 12th-century Germanic manuscript in Madrid.<sup>102</sup> Whereas scholarly opinion on the provenance of this manuscript is still a matter of debate,<sup>103</sup> it is generally agreed that the text and the images that appear in it are pivotal to our understanding not only of the developments of the later Renaissance versions of both, but also of the hugely influential texts and illustrations attributed to Michael Scot.<sup>104</sup> Since, arguably, the illustrations in the Madrid manuscript were imported as part of the 'text-cum-pictures tradition' associated with the *Revised Aratus Latinus* and since this set of images also shares a number of features with the illustrations that accompany the *Fragmenta Vaticana*,<sup>105</sup> it would seem that – despite its alleged philological worthlessness –<sup>106</sup> the importance of the *scholia Stroziana* as an agent of the transmission of the Classical tradition has been vastly underestimated.

Finally, one further aspect of the *scholia Stroziana* that seems to have been overlooked, is that, owing to the increased length of each section of text, when

<sup>98</sup> See BREYSIG 1867, pp. 105–232, relying exclusively on the three manuscripts: the *Stroziana*, Vatican, BAV, Urb. lat. 1358 and Palermo, Biblioteca comunale. Ms 2 Qq. E.

<sup>99</sup> See ROBERT 1878. Note that Robert defined the *scholia Stroziana* as a contamination between the *scholia Basileensis* and the *scholia Sangermanensis*. These latter '*scholia*' were so-named after the manuscript in which it was first identified, Paris, BnF, lat. 12957, which was originally part of the Sangermann collection.

<sup>100</sup> See MAASS 1898, p. 180.

<sup>101</sup> See BREYSIG 1867, pp. 105–232 and DELL'ERA 1979a.

<sup>102</sup> Madrid, Biblioteca nacional, Ms 19, ff. 55r–74r. This is highlighted by LE BOURDELLÈS 1985, pp. 97–98.

<sup>103</sup> The question is whether the Madrid manuscript can be traced to Montecassino – either itself or via its parent – or whether it is a product of a Spanish scriptorium. For a thorough discussion of the differing opinions, see HAFFNER 1997.

<sup>104</sup> For a recent discussion of the influence of the text and images of Michael Scot, see LIPPINCOTT 2017.

<sup>105</sup> See pp. 274–76 above. As mentioned, Guidetti favours a late 4th-century date for the Greek model from which the *Aratus Latinus* and *Revised Aratus Latinus* were derived, noting the similarities between the details of the bridal gifts surrounding Andromeda in two 10th-century *De signis caeli* manuscripts (Paris, BnF, lat. 5239 and Paris, BnF, lat. 5543) with the so-called 'Esquiline Treasure' dating to c. 380, in the Metropolitan Museum in New York (inv. 20.192.16). See GUIDETTI 2013, pp. 137–52 and 144–45 and GUIDETTI 2018, pp. 71–71.

<sup>106</sup> So-characterised by Martin: *en tout cas cette série de textes ne présente pas pour les moins d'intérêt philologique*. See MARTIN 1956, p. 40.

the text and/or its illustrations were inserted into the poem of Germanicus, additional lines were deleted to accommodate it.<sup>107</sup> That is to say: whereas the text of the poem in the manuscripts containing the *scholia Basileensia* regularly loses one or two lines every time a section of prose and/or its related pictures are introduced, in the Madrid manuscript and all its heirs, it is two or three lines that are excised.<sup>108</sup> If nothing else, this apparent preference to maintain the integrity of the *scholia-cum-picture* format over the integrity of the text of a Classical poem would seem to indicate the point at which the ‘fellow traveller’ had become the more valued guest or – to switch metaphors mid-sentence – that the cuckoo had grown so large that, once again, its host family was facing the danger of starvation.

The final chapter in this long exploration of the Latin *Aratea* and their ‘fellow travellers’ is the 4th-century Latin translation of Avienus.<sup>109</sup> It is a short chapter, since the text never attracted any version of the existing *scholia*, commentaries or pictures.<sup>110</sup> It was widely known and often cited, but never seems to have exerted the same magnetic power as the other Latin versions of the *Phaenomena*.

In conclusion, the *Phaenomena* of Aratus has served as the focal point of scholarly attention and curiosity for nearly two-and-a-half millennia. It has generated and sustained numerous forms of creative energy and intellectual activity. To a modern audience, such fascination with a didactic astronomical poem may well be inconceivable. For me, however, the complexity of issues surrounding the poem and the various forms in which it was disseminated offers a myriad of opportunities to trace the differing means and ways in which the human mind reacts to information. On the one hand, there seems to be definite series of patterns in how it is assumed one should deal with the *Phaenomena* – most of which show the subsequent scholar, scribe or illuminator exhibiting the priorities of his or her age. The early Romans translate, the Alexandrians collate, the Carolingians integrate, the Humanists validate. On the other hand, each individual manuscript betrays a slightly different version of this story. Each scribe, each commentator and each artist is forced to make a very specific set of decisions. Sometimes they are blessed with tremendous insight and skill; and, other times, they are nearly undone by a complete lack of either.

It is, perhaps, this confluence of ‘big issues’ and small details that makes research into this complicated topic so daunting, yet compelling. For, despite

<sup>107</sup> Jordi Pàmias has pointed out that the *scholia Stroziana* also has a mysterious feature in star catalogue for the constellations of Cepheus, whose content differs from both those found in the *scholia Basileensia* and the *Revised Aratus Latinus*, but does find a striking parallel in the text of the *Epitome* [personal communication, March 2019].

<sup>108</sup> For a table outlining this difference in the loss of lines, see Appendix I in <https://www.thesaxlproject.com/the-saxl-project/manuscripts/classical-literary-tradition/germanicus-aratea/>.

<sup>109</sup> The text has been edited by BREYSSIG 1882 and SOUBIRAN 1981.

<sup>110</sup> That is, if one dismisses the exceedingly slim possibility that the pictures in the Leiden *Aratea* might have originated in an illustrated version of Avienus’s poem.



millennia of trying, we still have not plumbed its depths, nor have we come to understand fully the various tales to be told by the *Phaenomena* and their numerous 'fellow travellers'.

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