

Addendum:

The manuscript notes in the margins of 13 of the illustrations in Book III of the accompanying copy of Ratdolt's 1482 edition of *De astronomia* were written by a previous German owner, sometime after 1637. They provide indications as to where additional information can be found concerning the myths of these constellations and mostly refer to well-known mythological compendia that were popular during the 17th and 18th centuries.

The *terminus post quem* for these annotations is the six references to the well-known *Acerra philologica* ('the philological [incense]-box') by Peter Lauremberg, which was first published in Rostock in 1637. It was an extremely popular collection of useful and often amusing 'explanations' of the stories taken from Greek and Roman mythology. Originally written in German, the text was subsequently translated in Dutch and Latin and was regularly republished and reprinted, becoming one of the most popular books of the period. There is also one reference to the similarly popular *Mythologiae, sive explicationis fabularum libri decem...* by Natale Conti, which was first printed in Venice in 1567. The original Latin version of the text was reprinted 21 times and the French translation from c. 1600 was reprinted six times. Finally, there is one reference to the introductory astronomical text by Johann Georg Trigler, *Sphaera. Das ist: Ein kurtzer Astronomischer Tractat...*, which was first published in Leipzig in 1614.

The author of the marginalia also points to specific passages from Ovid's *Metamorphoses*, Cicero's *De natura deorum* and the *Elegies* of Propertius – though these references might have been taken from the compendia listed above.

APPENDIX I

Working from the information supplied in Viré's catalogue (1981) and the notes in ed. LeBœuffe (1983, pp. xlvii–lvi) and ed. Viré (1992, pp. xii–xxvii), only 11 of the 39 manuscripts predating the 13th century have illustrations accompanying the Hyginus sections.

In the table below:

- The manuscripts are listed more-or-less chronologically, with an attempt to reconcile the views of Le Bœuffe and Viré when they diverge.
 - The Greek and Roman letters signify the manuscript's position within Viré's proposed families and sub-groups, with α and β being the closest to the classical archetype. The mark (-) indicates manuscripts which she has found difficult to place within specific families. Mss with \emptyset indicate that they have not been included in Viré's list.
 - The mss listed in **bold** have illustrations alongside the text of *De astronomia*.
 - The mss marked with an asterisk (*) do contain illustrations, but not within the Hyginus sections.
- See **APPENDIX II** for more detail.

9th-century

γ	Valenciennes, Bibl. Mun.	Ms 337	St-Amand-en-Pévèle
α	Vatican, BAV	Reg. lat. 1260	N. France, Fleury?
α	St Gallen, Stiftsbibl.	cod. 250*	St Gallen
γ	Milan, Bibl. Ambrosiana	Ms M 12 sup.	NW France (Corvey?)

9th-10th century

α	Munich, BSB	clm 13084	Freising, Bavaria
α	Bern, Burgerbibl.	Ms 45	Fleury, St-Benoît-sur-Loire
α	Montpellier, École des Méd.	H 334	Loire
\emptyset	ex-Dresden, Landesbibl.	Dc. 183*	W. Francia

10th century

α.	Paris, BnF	lat. 8278	St-Rémi, Reims
δ	Paris, BnF	lat. 11127	Monastery of St-Willibrod d'Epternach
γ.	Leiden, Universiteitsbibl.	Voss. lat. 8° 84	France
β.	London, BL	Harley Ms 2506*	France (Fleury, St-Benoît-sur Loire?)
(-).	Oxford, Bodleian Libr.	D'Orville 95	S. German

11th century

γ.	Paris, BnF	lat. 8663*	Fleury
(-).	Oxford, Bodleian Libr.	D'Orville 145	Ghent (Abbey of St-Pierre au Mon Blandin?)
α.	Leiden, Universiteitsbibl.	Voss. lat. 8° 15	St-Martial, Limoges (Adémar de Chabannes)
α.	Vatican, BAV	Reg. lat. 123	Sta Maria de Ripoll (Monk Olivo)
ε.	St Paul im Lavantthal, Stiftsbibl.	16/1	Kloster St Blasien, Baden Württemberg
Ø.	Aberystwyth, NLW	Ms 735 C*	English
β	Cambridge, Trinity Coll.,	R. 15.32	partially illustrated; Winchester

11-12th century

α.	Vatican, BAV.	Reg. lat. 1207	France
α.	Vienna, ÖNB.	Vindob. 2269	(?)
δ	Brussels, Bibl. Roy.	10078-10095	Abbey of Gembloux (scriptorium of Sigebert)

12th century

η	Paris, Private Coll	form. Phill. 26235	N. France
β	Chartres, Bibl. Mun.	498	Chartres (Theoderic of Chartres)
β	Wroclaw, Bibl. Uniwers.	IV 8° 11	France?
β	Hannover, Niedersächsische Landesbibl.	IV. 394	Wietmarschen, Lower Saxony
ε	Wolfenbüttel, Herz. Aug. Bibl.,	18.16. Aug. 4°	Monastery of Wissembourg, Alsace
ε	Florence, BML	Laur. plut. 29. 30	N Italian?
(-)	Leiden, Universiteitsbibl.	BPL 225/ Hemsterhusius 425	Fleury?
ε	Vienna, ÖNB	Vindob 51	S Germany
ε	Leiden, Universiteitsbibl.	Gron. 21	minimally illustrated; Winchester
β	Leiden, Universiteitsbibl.	Voss lat 4° 92	from Auxerre
ε	London. BL	Arundel Ms 339	S Germany (Kastl Abbey, Bavaria?)
β	London, BL	Roy. Ms 12.C. IV	Rochester
ζ	Cambridge, Fitzwilliam Mus.	McClellan 165	Sint Truiden/St-Trond
η	Glasgow, Hunter Mus	T. 42	Durham
ζ	Vatican, BAV	Pal. lat. 1363	German
Ø	Baltimore, Walters Art Gall.	W 734	France

APPENDIX II

Manuscripts containing the text (or fragments) of *De astronomia* in which the accompanying texts are illustrated, but Hyginus is not illustrated

Group I:

The Franco-English manuscripts of Cicero's *Aratea*

London, BL	Harley Ms 647	French (Lorraine?), c. 820
London BL (1122?)	Cotton Tib. C. 1	Peterborough, early 12th century
Göttweig, Stiftsbibl.	Ms 7(146)	Lombard, 15th century
London BL	Harley Ms 2506	Fleury, c. 990 - c. 1000
London, BL	Cotton Ms Tib. B V, pars 1	English, c. 1000 (991-1016)

In the first three manuscripts, text taken from Books II and III of *De astronomia* appears within the contours of the illustrations of the constellations figures themselves, as a kind of *technopaignion* or *carmina figurate*. First identified by VOGELS 1884 and 1887. The text was first fully edited by KAUFFMANN 1888 (who believed the inserts in Harley 647 were added by a later hand, though he traces the fashion for these sorts of embellishments to the 2nd or 3rd century) and BUNTE 1889. For Greek examples of this practice, see LUZ 2010 and for Latin examples, see WEIS 1969 and ULRICH 1991.

The fourth manuscript, Harley 2506, contains Books I-IV of *De astronomia* (ff. 1r-30r), alongside a number of shorter astronomical texts (including *De differentia circuli et sphere* and *De cursu septem planetarum per zodiacum circum* by Abbo of Fleury (ff. 30v-32v), which has prompted scholars to suggest that the manuscript may have been carried by Abbo himself to England or, possibly, later given by him to the Benedictine monastery at Ramsay). The folios 36r-48v contain an illustrated version of Cicero's *Aratea*. The constellation figures are iconographically close to the other Cicero manuscripts, but the excerpts from Hyginus have been removed from their bodies. Instead, there are sections of the pertinent text from ps.-Bede, *De signis caeli* in the margins.

In the fifth manuscript, Cotton Tib. BV, pars 1, the constellation figures themselves are similar to the other Cicero manuscripts, but the text from Hyginus has been removed from their bodies. In this manuscript, however, the ancillary texts have been taken from Hyginus and the *Revised Aratus latinus*, and are placed so they surround each figure on the illustrated folii. Moreover, the content is exclusively mythological with none of the descriptive star-catalogues included. For a detailed description of these extracts, see LIPPINCOTT 2019a, pp. 282 and 316-17 (APPENDIX I).

For fuller descriptions and illustrations, see www.thesaxlproject, *ad. cit.* and BLUME/HAFFNER/METZGER 2013, I, 1, pp. 68-69 and 314-26, and I, 2, figs. 399-419 (Harley 647); I, 1, pp. 91-95 and 327-332; I, 2, figs. 420-434 (Harley 2506); I, 1, pp. 138 and 314-20, and I, 2, figs. 375-98 (Cotton Tib C I); I, 1, pp. 108-12 and 308-13, and I, 2, figs. 349-74. (Cotton Tib BV, 1); and BLUME/HAFFNER/METZGER 2017, II, 2, pp. 725-31 and II, 3, figs. 907-29 (Göttweig 7).

Group II:

Compilation manuscripts with an illustrated *Revised Aratus latinus* alongside an unillustrated *De astronomia*

ex- Dresden, Landesbibl.	Dc. 183	West Francia, early 9th-century
St Gallen, Stiftsbibl.	250	St Gallen, last quarter 9th century

Two 9th-century compilation manuscripts, each of which contain an un-illustrated version of Hyginus, the text of the *Revised Aratus latinus*, Cicero's *Aratea*, the *Excerptum de Astrologia* and the *De ordine ac positone stellarum*. In these two manuscripts, the constellation illustrations accompany the text of the *Revised Aratus latinus*. Note that the parent manuscript of St Gallen 250, St Gallen 902, does not contain any Hyginian texts, but does contain Hrabanus Maurus's *De computo (cum epistola praefatoria ad Marcharium)*.

For fuller descriptions and illustrations, see www.thesaxlproject, *ad. cit.* and BLUME/HAFFNER/METZGER 2013-17, I, 1, pp. 7 and 234-39, and I, 2, figs. 155-182 (Dresden 183); and I, 1, pp. 111 and 508-14, and I, 2, figs. 843-863 (St Gallen 250).

Group III:

Compilation manuscript with an illustrated *De ordine ac positione stellatum in signis* alongside a section of *De astronomia*, with one illustration

Paris, BnF	lat. 8663	Fleury, c. 1000
------------	-----------	-----------------

The manuscript contains all four books of the *De astronomia* (ff. 1r-19v), which are not illustrated, except for a single illustration of Centaurus (in Book II, on fol. 11v), which was first noted by LE BŒUFFLE 1983, p. li. There is a complete set of illustrations in this manuscript that accompanies the stellar catalogue, *De ordine ac positione stellarum in signis* (ff. 20r-24r), and the image of Centaurus in this set (fol. 23v) is by the same hand as one that appears within the Hyginian text. It is also iconographically similar, missing only the hare hanging from the Centaur's spear and with a different positioning and formation of the front hooves.

For fuller descriptions and illustrations, see www.thesaxlproject, *ad. cit.* and BLUME/HAFFNER/METZGER 2013-17, I, 1, pp. 113, 118 and 430-35, and I, 2, figs. 681-90.

Group IV:

In addition to Viré's list, the following related works are also illustrated:

11th -12th century

Munich, BSB	clm 10270 Hyginus excerpts	Mannheim or Strassburg, late 11th/ea. 12th c
London, BL	Roy Ms 13. A. XI <i>Excerptio Abbonis ex Hyginus de figuracione signorum</i>	partially illustrated; English, ea. 12th c
Oxford, Bodleian Libr.	Bodley 614 <i>Opusculum de ratione sphaerae / Hyginus, Recensio interpolata</i>	English, c. 1120-40
Oxford, Bodleian Libr.	Digby Ms 83 <i>Opusculum de ratione sphaerae / Hyginus, Recensio interpolata</i>	English, mid-12th c

For fuller descriptions and illustrations, see www.thesaxlproject, *ad. cit.* and BLUME/HAFFNER/METZGER 2013, I, 1, pp. 135-38 and 383-88, and I, 2, figs. 558-65 (Munich 10270); I, 1, pp. 134-37 and 333-339, and I, 2, figs. 435-50 (Roy Ms 13. A. XI); I, 1, pp. 126-130 and 389-95, and I, 2, figs. 566-93 (Bodley 614); and I, 1, pp. 125-27 and 396-402, and I, 2, figs. 594-631 (Oxford, Digby 83).

II-4

Group IV:

Aberystwyth, NLW

Ms 735C

2 parts: 1) probl. Limoges, c. 1000
2) English, late 11th c

Parenthetically, one might mention the manuscript in Aberystwyth (Ms 735C), which is actually composed of two distinct parts. The first section is a miscellany, which contains an illustrated version of Germanicus's *Aratea*, complete with a series of interesting and unusual celestial maps. The second section contains all four Books of *De astronomia* and is not illustrated. The first sections seem to have been written and illustrated in France, while the Hyginus text is written in a later, Insular hand. Also, there is evidence that the first part of the manuscript travelled independently for some time before the second part was added. Any connection between the two, therefore, reflects a much later decision to bring these two previously independent manuscripts together. Nevertheless, the proximity of *De astronomia* to an important series of celestial maps is tantalising and raises the question of whether the Hyginus text was purposefully added to the illustrated Germanicus manuscript in order to take advantage of the maps that were contained within it – and, if so, when did this occur?

For fuller descriptions and illustrations, see the facsimile edition LIPPINCOTT 2019c. See also, www.thesaxlproject, *ad. cit.* and BLUME/HAFFNER/METZGER 2013, I, 1, pp.95-97 and 179-84 and I, 2, figs. 1023.

APPENDIX III:**A 'Hyginian map' described in verse, with English translation and commentary**

(*the asterisks refer to explanations in the commentary below)

*Haec pictura docet quicquid recitavit Hyginus**In septem quinis describens sidera signis**Ad caeli terraeque globos in mole rotundos.**Mallet prorsus opus solidis insigne figuris,*

5 *Quas nequit in plano similes expendere quavis,*
*Dum lateant intus quaedam curvisque profundis.**

*Nam borealis apex arctos complexus et anguem**Arctophylaca tegit nec non simulacra coronae,**Engonasinque, lyram, cygnum ceu Cassiopiam,*

10 *Cuius adest pedibus coniunx et filia dextris.*

*Perseus inde gener, tunc est caprarius, inde**Deltoton, equus ac delphin, aquila atque sagitta,**Anguitenens, aries, taurus, cum Castore Pollux**Et cancer, leo, virgo, suis cum scorpio chelis,*

15 *Arcitenens tandem, capricornus et urnifer inde;*
Piscibus extremus locus est quem signifer explet.

This picture shows what Hyginus set out in his description of the stars in the 35 constellations on the huge, round spheres of the sky and the earth. Of course, I would prefer a work with three-dimensional figures,

which no one can represent exactly and realistically on a flat surface, because some parts [of them] are hidden inside [the sphere] and [behind its] curves.*

For the apex of the northern [sky] embraces the Bears and the Snake [Draco], includes Arctophylax [Bootes] as well as the image of the Crown, and Engonasin [Hercules], Lyra, Cygnus and also Cassiopeia, [with] her husband [Cepheus]

at her feet, and her daughter [Andromeda] on her right side.

Then, their son-in-law, Perseus, [and] then there is the Goatherd [Auriga], then Deltoton, Equus and Delphinus, Aquila and Sagitta, the Snake-Holder [Ophiuchus], Aries, Taurus, with Castor [and] Pollux, and Cancer, Leo, Virgo, [and] Scorpio with his Claws.

Finally, the Bow-wielder [Sagittarius], Capricorn, [and] then the Urn-carrier [Aquarius]. The Fishes [Pisces] are at the very end and complete the [northern] signs.

*Primus in austrinis Orion partibus exit,
Tum lepus est et utrique canes Argoque triremis,
Hydrus, Centaurus, sed et ara et piscis enormis,*

20 *Pistrix, Eridanus: * sic sphaerae finis habetur,*

20 *Quam gemini findunt aequa sub sorte coluri,**

*Se tangendo polis dum zonas quinque pererrant.**

*Has hinc inde sibi diversa parte coaequat
Linea quae scindit medios utrosque coluros.**

25 *Torrída zona duas circa se a frigore servat;
Nam zonas similes aequales dicimus esse
In caeli terraeque modo Cicerone magistro.**

*Vertex alteruter terdenis partibus a se
Semper abest circumque facit sex undique sumptis;**

30 *Tum quinas utrimque feret habitabilis ora.**

Aequidies capit octonas hinc, inde quaternas.

*Corpora signorum circis reseantur eisdem.**

*His super esse ferunt caelo cuicumque notandos,**

In the southern parts, Orion is the first to rise. Then, Lepus and the two Dogs [Canis Maior and Minor] and the trireme Argo, Hydra, Centaurus and Ara and the enormous Fish [Piscis Austrinus], Pistrix [Cetus] [and] Eridanus. * In this way, the end of the sphere is reached, which the twin colures [then] divide into [two] equal parts. *

They [each] cross over the five Zones until they come together at the poles. *

Next, it [the sphere] then divides itself into equal parts on this side and that, with a line that cuts through the middle of both the colures. *

The Torrid Zone is separated by the two neighbouring [Temperate] Zones from the Frigid [Zones]. Thus we say that there are similar Zones with the same properties in the sky and on the earth, according to the teachings of Master Cicero. *

The two ends [of the sphere] are always 30 parts distant from each other, [and] they [extend] six [parts] on either side [of the poles]. *

Then, on both sides [of the Frigid Zones], the Habitable Zone comprises five [parts]. *

Next, the Equinoctial Zone [the two Torrid Zones] contains eight [parts], with each [Zone made up of] four [parts].

The bodies of the signs are restrained by these Circles.*

They say that everyone can locate them [the Circles] by regarding these [bodies of the constellations] in the heavens.

*Quorum primus inest qui candidus extat in astris**

35 *Obliquo caeli portas discrimine tangens; **

*Alter ubique vagus graece vocitatur horizon. **

Solus eget terrae spatiis ut limes in astris

*Dimidium sphaerae momentis omnibus abdens.**

*Ergo decem circis totus variatur Olympus,**

40 *Ex quibus ille latet semper qui dicitur austri,**

Cum nobis numquam latet qui continet arctos.

*Inter utrosque tamen quod hinc levat, accidit illic.**

Arcticus his signis finitur circulus: extra

Laeva Bootis inest cum dextro poplite flexo

45 *Herculis innixi pedibus, umeris quoque Cephei;*

*Tum siliquastrensis tangit confinia basis.**

Solstitialis et hoc signorum limite constat:

Arcturus, lapsusque genu, Cepheia coniunx,

Anguiger oblongus, curvi quoque sinciput anguis

50 *A superis tanguntur eo cum coniuge Persei*

(Cui tamen Arctophylax [sic = Andromeda] est in

*contraria versus)**

The first of these [Circles], is that which stands out white against the stars, * touching the gates of the sky with a distinctly oblique path; * the second one [of these Circles] is variable everywhere [and] is called 'the horizon' in Greek. * It alone requires the space of the earth as a boundary for the stars, with which it hides half of the sphere at all times. * Therefore, the whole of Olympus is differentiated by ten Circles. *

Of these, the so-called Southern [Circle] * is always hidden, while the one that contains the Bears is never hidden [from our view]. Between the two [Circles], however, [there is] that which rises on this side, sets on that side. * The **Arctic Circle** * is bounded by these signs: the left [side] of Bootes is outside [it]; with the bent right knee [and] feet of the kneeling Hercules; and also the shoulders of Cepheus; then it touches the edge of the base of the seat [of Cassiopeia]. *

And this makes up the boundaries of the signs of the **Solstitial [Circle]**: Arcturus [Bootes]; and he who has fallen on his knees [Hercules], the wife of Cepheus; the elongated Snake-holder [Ophiuchus]; and also half of the head of the curved Snake are touched by it from above, along with the wife of Perseus [Andromeda] (who, however, Arctophylax [sic = Andromeda] is upside-down [and] connected to the middle of Pegasus); *

*Pegaseo vinctae medio) pedibusque marito
Qui sectus laevo cubito cum crure sinistro
Heniochi caput ut currens ex pulvere foedat;*

55 *Ille tamen quasi lora tenens pede cornua tauri
Deprimit ac geminis traiectis denique collis
Inter aselliferi consurgit lumina cancri
Currens per pectus, ventrem lumbosque leonis
Perque caput dextramque alam volitantis oloris.**

60 *Qui lucis noctisque pares dat circulus horas
Arietis ima pedum recipit,* vestigia primum
Semibovisque genu praecidit, et inguinis eius
Ultima quem fudit putens urina deorum; *
Sustinet et geminos flexus ex ore draconis,*

65 *Exit et a genibus longo serpente ligati,
Postquam chelarum longissima brachia pressit;
Tum Ganymedeae raptricis transilit alam
Pegaseamque iubam dirimens ex ordine pisces.**

and [the Circle is marked by] the feet of her husband, whose left elbow and left leg are cut by it.

As if running, he [Perseus] throws dust on the head of Heniochus [Auriga], [and] he who is holding the reins [Auriga], as it were, presses down on the horn of the Bull [Taurus] with his foot. And, finally, it [the Circle] cuts through the necks of the Gemini, [and] rises up between the stars of the Ass-bearing Cancer; running through the breast, flank and loins of the Lion [Leo]; and through the head and right wing of the Flying Bird [Cygnus].*

Here, the Circle that gives equal hours to the day and night [**Equinoctial Circle/ Celestial Equator**], receives the tip of the of the hoof of Aries;* and it precedes the first vestiges of the knee of the half-Bull [and], finally, the groin of he [Orion], who [was created] by the scattering of the urine of the Gods on the rotting [skin];* and it supports the twin coils coming from the head of the Dragon [Hydra]; and it escapes the knees of he who is entwined by the long Snake [Ophiuchus]; afterwards it presses the long arms of the Claws [of Scorpio], then it goes through the wing of the one who abducted Ganymede [Aquila] and through the mane of Pegasus, neatly dividing the Fishes [Pisces].*

Quid hiemalis agat signorum corpora scindens

70 *Decollatus eo novit qui spicula mittit
Piscinusque caper, nec non lymphaticus auspex
Et pistrinx, fluvius, lepus et leporarius adsunt,
Finditur et puppis, Centauro terminat orbis.
Ultimus aversus boreae sua sidera in ima**

75 *Manibus ostendit fluvio* finitus et Argo,
Centaurique pedes postremos tangit et aram.*

What does the **Winter [Circle = Tropic of Capricorn]** do as it cuts through the bodies of the constellations?

He who knows about arrows [Sagittarius] is beheaded, and the Goat-Fish [Capricornus], as well as the watery Priest [Aquarius], and Pistrinx [Cetus], the River [Eridanus], Lepus and the hare-hunter [Orion] attend [it]; and the stern [of Argo] is divided by it, and the Orb finishes with Centaurus. The final [Circle] that faces away from the north [the Antarctic or Ever-Invisible Circle], the lowest boundary displays its stars with the remains* of the River [Eridanus] and Argo, and it touches the hind feet of Centaurus and the Altar [Ara].*

COMMENTARY

vv. 1-6 This passage has been translated into German by Stückelberger and into Dutch by van Els.¹

vv. 7-20 This list of the constellations does not actually follow the order found in the text of *De astronomia*.

The changes include,

in the northern hemisphere:

- Cepheus and Cassiopeia have been transposed
- Ophiuchus should appear just after Auriga
- and Sagitta and Aquila have been transposed.

In the southern hemisphere:

- Cetus, Eridanus and Lepus should precede Orion
- Hydra should appear after Ara
- Corvus and Crater are missing.

In terms of the order of the constellations within the list, it is interesting to compare two other popular poems listing the constellations in a 'Hyginian order' (that is, of separating the constellations into three groups: those found in the northern hemisphere, the zodiacal band and the southern hemisphere).²

¹ STÜCKELBERGER 1990, p. 75 and STÜCKELBERGER 1994, p. 36: *Diese Abbildung zeigt, was Hygin in seiner Beschreibung der 35 Sternbilder dargelegt hat, indem sie die kugelförmige Gestalt des Himmels und der Erde nachahmt. Vorziehen würde ich freilich ein Werk mit körperlichen Figuren, die man nicht entsprechend in der Ebene ausbreiten kann, da doch gewisse Teile im Innern der gekrümmten Oberfläche verborgen sind.*

Note that van Els's translation of this passage into Dutch is slightly different (underlining is mine to highlight differences): *Deze afbeelding laat datgene zien wat Hyginus in zijn beschrijving van de 35 sterrenbeelden heeft uitgelegd, omdat zij (de afbeelding) de bolvormige gestalte van de hemel en de aarde imiteert. Toch zou ik de voorkeur willen geven aan een instrument met stoffelijke (driedimensionale) figuren, die men immers niet naar believen op een plat vlak kan uitbreiden omdat bepaalde delen in het innerlijk van het gekromde oppervlak verborgen zijn?* See VAN ELS 2015, p. 651, n. 1.

² For some of the different orders in which the constellations are listed in other Hyginus-based sources, see DUITTS 2005.

I. In the poem attributed to Priscian, with the incipit *Ad boreae partes arcti vertuntur at anguis*, there is an even greater number of displacements in both the northern and southern hemispheres.³

II. There is an anonymous poem that appears, seemingly uniquely, in the early 13th-century, French/Anglo-Norman miscellany in the British Library (London BL, Add. Ms 23892, ff. 7r-15r), bearing the title: *Descriptio mundi secundum [C. Julium] [Hyginum]* and with the incipit: *Auctores perhibent mundum constare localem,...*. In its 518 hexameters, one finds repeated references and citations from Hyginus (especially from Books I and IV) and the list of constellations (vv. 201-16) follows Hyginus's order nearly exactly (with the exception of a double-listing of Cetus: as Pistrix, v. 521 and Cetus, v. 523). Each constellation is also provided with a total of the stars within it. There is only a cursory discussion of the celestial Circles, however; and there is no recreation of which constellations define them. The anonymous poet, whom Haye suggests reflects a Parisian background dating to the second third of the 13th century, also cites the names of Ambrose (v. 18), Clement (v. 505), Strabo (v. 393) and Martianus Capella (v. 19).⁴

vv. 20-21 The colures are often used to divide the sphere into two 'twin' hemispheres. When the vernal and autumnal equinoctial colures form the outer boundaries of each half of the celestial sphere, they create the so-called 'summer' and 'winter' hemispheres.⁵ The description suggests that the picture in question represents a pair of hemispheres; and, since the positions of the

³ For a recent edition and German and English translations, see LIPPINCOTT 2019c, pp. 96 (German transl by Peter Diemer), 288 (English) and 391 (Latin). DEKKER 2013, p. 190, n. 116 provides a list of manuscripts in which the poem appears.

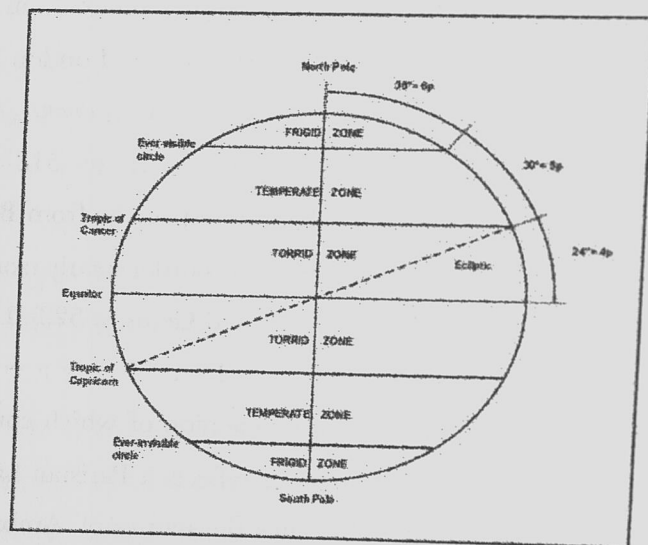
⁴ For the most recent edition and studies of the poem, see HAYE 1997 and 2007; and HÜBNER 2009 (who corrects some of Haye's readings and explains their proper context). See also THORNDIKE/KIBRE 1963, p. 162; WALTHER 1969², nr. 1680; and DEKKER 2013, p. 190, n. 118.

⁵ See the descriptions of winter and summer hemispheres in DEKKER 2013, pp. 118-142 and 207-27.

constellations on the Circles in the poem follow Hyginus so closely, it argues in favour of a set of hemispheres defined by the equinoctial colures.⁶

v. 22 Each colure runs from pole to pole, crossing through the five Zones which are discussed below.⁷

vv. 23-24 This refers to the Celestial Equator, which bisects the sphere into northern and southern hemispheres, and also bisects each colure.



⁶ Noting that Aratus starts his sequence of zodiac constellations with Cancer, Hyginus states that he and other astronomers prefer to begin it with Aries. See *De astronomia*, IV, iv, cited by DEKKER 2013, p. 191. It is also worth mentioning that there are no known classical or medieval depictions of the hemispheres divided along the lines of the solstitial colures.

⁷ Compare the similar phrasing in Macrobius, *Commentarii in somnium Scipionis*, I, xv, 14: *Praeter hos alii duo sunt coluri, quibus nomen dedit imperfecta conversio: ambientes enim septentrionalem verticem atque inde in diversa diffusi, et se in summo intersecant et quinque parallelos in quaternas partes aequaliter dividunt* ('In addition, there are two others, called the colures, which are so-called because they do not make complete circles. Crossing the celestial north pole and proceeding in different directions, they intersect each other at the northern vertex and divide each of the five parallels into four equal parts'). Ed. WILLIS 1994, pp. 62-63 and English transl STAHL 1952, p. 151. Stahl (p. 151, n. 21) points out that the term *colurus* comes from the Greek *kolouros* (κόλουρος), which means, literally, 'dock-tailed', but one might prefer 'mutilated', in the sense that they are not complete circles.

v. 25 The two Torrid Zones flank the Equator and the Temperate Zones are placed on either side of the Torrid Zones, acting as a buffer between them and the Frigid Zones.

vv. 26-27 The system of celestial parallels in the heavens is mirrored by a similar set of 'Zones' on Earth. The reference to 'Master Cicero' here reflects the fact that, in addition to his primary reliance on Hyginus, the author is also aware of the information regarding the terrestrial and celestial Zones that appears in Macrobius's *Commentary on Cicero's Dream of Scipio*.⁸ In particular, Macrobius devotes a long section to explaining why the seemingly contradictory statement of Virgil and Cicero – the former claiming that these 'Zones hold the sky' (*Georgics*, I, 233: *quinque tenent caelum zonae*) and the latter saying that these 'belts encircle the Earth' (*De re publica*, VI, ix, 20: *Cernis autem eandem terram quasi quibusdam redimitam*) – are, in fact, not contradictory and both are correct, since the celestial and terrestrial systems mirror each other.⁹

vv. 28-29 Both Hyginus and Macrobius explain that the circumference of the sphere has been divided into 60 intervals, which Macrobius tells is measures 252,000 stades. Therefore, the furthest points of

⁸ See Macrobius, *Commentarii in somnium Scipionis*, II, v-ix. As Woodward notes, more than 150 manuscripts examples of Macrobian *mappaemundi* have survived. See WOODWARD 1987, p. 300. The tradition of the zonal map is carried on by Martianus Capella in his *De nuptiis Philologiae et Mercurii*, and in the *Liber Floridus* of Lambert of St-Omer. See WOODWARD, *op. cit.*, p. 300, n. 78 for references. See also STAHL 1942, esp. pp. 235-36 and HIATT 2007.

⁹ See Macrobius, *Commentarii in somnium Scipionis*, II, v, 7-8 and II, vii. For the reference to Cicero's recognition that there was a connection between the celestial and terrestrial Zones, see especially the passages in Macrobius, *Commentarii in somnium Scipionis*, II, vii, 7: *Et ipsum autem scisse Ciceronem quod terreni cinguli caelestibus inficiantur, ex verbis eius ostenditur. Ait enim, e quibus duos maxime inter se diversos et caeli verticibus ipsis ex utraque parte subnixos obriguisset pruina vides. [...] Cum ergo manifeste et rigorem de caeli verticibus et fervorem de sole in terrae cingulos venire signaverit, ostendit prius in caelo hos eodem congulos constituisse* ('That Cicero himself was aware of the connection between the earth's zones and those of the heavens is shown by his words 'You observe that the two which are farthest apart and lie under the poles of the heavens are stiff with cold'. [...] His obvious inference is that cold comes to the Earth's zones from the poles of the sky and that the heat comes from the Sun shows that he first assumed corresponding zones in the sky'). Ed. WILLIS 1963, p. 118 and English transl STAHL 1952, p. 209.

the sphere – the North and South Poles – are always set at 30 intervals from each other.¹⁰ In between the two Poles, there are six Zones, which maintain the same breadth all around the surface of the Earth. The six Zones would be: the two Frigid Zones; the two (habitable) Temperate Zones; and the two Torrid Zones. In several version of the Macrobian terrestrial maps, there is also a central Equatorial band along which the Oceanic River (the *Alveus Oceani*) flows.¹¹

According to both Hyginus and Macrobius, the parallels marking the boundaries of the two Frigid Zones extend 6 parts from each of the Poles.¹²

¹⁰ See also Hyginus, *De astronomia*, I, vi, 1: *Quinque autem quos supra diximus sic in sphaera metiuntur: initio sumpto a polo qui boreus appellatur, ad eum qui notius et antarcticus vocatur, in triginta partes unum quodque hemisphaerium dividitur, ita uti dimensio significari videatur in tota sphaera sexaginta partes factas* (As for the five [Circles] of which we spoke above, here is their measure on the sphere: if we start from the pole called “boreal” towards what we call “southern” and “antarctic”, each hemisphere is divided into thirty parts, so that the measure of the whole sphere seems to consist of sixty parts’). Ed. LE BŒUFFLE 1983, p. 8 and VIRÉ 1992, p. 7 (reading *significare*). See also Macrobius, *Commentarii in somnium Scipionis*, II, vi. Stahl notes that this method of the division of the Earth is the one used by Eratosthenes. See STAHL 1952, p. 207.

¹¹ See Macrobius, *Commentarii in somnium Scipionis*, II, ix, 4: *Ceterum verior (ut ita dicam) eius alveus tenet zonam perustam ...* (‘But the truer bed of the Ocean, if I may call it that, flows along the whole extent of the equator...’). Ed. WILLIS 1963, p. 123 and English transl STAHL, p. 214. As mentioned, this feature regularly appears on Macrobian terrestrial zonal maps, though modern catalogue descriptions tend to mis-translate *Alveus Oceani* as ‘the boiling sea’, rather than ‘the [river] bed of the Ocean’.

¹² Hyginus, *De astronomia*, I, vi, 2: *Deinde ab eodem principio boreo sex partibus ex utraque finitione sumptis, circulus ducitur cuius centrum ipse est polus finitus...* (‘Then, if from the same northern starting point we take six parts on either side, we draw a circle whose centre is precisely the pole itself’). Ed. LE BŒUFFLE 1983, p. 8 and VIRÉ 1992, p. 7 (reading *polus est*). See also, Macrobius, *Commentarii in somnium Scipionis*, II, vi, 5: *... et spatium frigidae ab I usque ad C habet sexagesimas sex, quae tenent stadiorum viginti quinque milia ducenta* (‘... ‘while the measurement of the frigid zone, that is from I to C, is 6 intervals or 25,200 stades’). Ed. WILLIS 1963, p. 117 and English transl STAHL 1952, p. 207. The 6 parts reflect a latitude of 36°.

v. 30 Again, these measurements appear in both Hyginus and Macrobius.¹³ The Temperate Zones were considered to be the only habitable Zones, with the southern Temperate Zone being populated by the Antipodeans, though, as Macrobius points out, this is ‘inferred only from reason’ (*sola ratione intellegitur*) because the occupants of both Zones are unable to cross the intermediary Torrid Zone, due to its scorching heat.¹⁴

v. 31 There appears to be a slight conflation of terms here. *Aequidies*, or ‘the [line of] equal days’ should indicate the Equinoctial Circle, or the Equator; but here the author is actually describing the boundaries of the Torrid Zones, which lie on both sides of the Equator. This is made clear by his description of each Zone measuring four parts, and the two Zones together measuring eight parts.¹⁵

¹³ See Hyginus, *De astronomia*, I, vi, 2: *Ab hoc circulo de reliquis partibus quinque sumptis [...], circulus ducitur qui θεινός τροπικός appellatur* (‘If from this circle we take five parts of the rest [...], we draw a circle called Summer Tropic’). Ed. LE BŒUFFLE 1983, p. 8 and VIRÉ 1992, p. 7. See also Macrobius, *Commentarii in somnium Scipionis*, II, vi, 5: *Latitudo autem cinguli nostri qui temperatus est, id est ab N usque ad I, habet sexagesimas quinque, quae faciunt stadiorum milia viginti unum* (‘The breadth of our temperate zone, that is from N to I, is five intervals or 21,000 stades’). Ed. WILLIS 1963, pp. 116-17 and English transl STAHL 1952, p. 207.

¹⁴ See Macrobius, *Commentarii in somnium Scipionis*, II, v, 12 and 16-17. As Edson notes, the assumptions about the Habitable Zones persisted ‘even though in the early Middle Ages fuller knowledge of the northern frigid zone, which included part of Britain, made it quite clear that it was habitable – or at least inhabited’. See EDSON 1997, p. 7. Stahl notes that these degrees and dimensions agree with Geminus (V, 45-46 and XVI, 7-8), while the system of degrees (but not of the Zones) agrees with Theo of Smyrna (202-03). See STAHL 1952, p. 207, n. 3.

¹⁵ See Macrobius, *Commentarii in somnium Scipionis*, II, vi, 4: *Ab A igitur usque ad N, quod est medietas perustae, habet sexagesimas quattuor, quae faciunt stadiorum milia sedecim cum octingentorum adiectione; ergo omnis perusta sexagesimarum est, et tenet stadiorum milia triginta tria et sexcenta insuper* (‘The distance from A to N, beginning at the middle of the torrid zone, comprises four intervals or 16,800 stades; the whole torrid zone, therefore, comprises eight intervals or 33,600 stades’). English transl STAHL 1952, p. 207. Hyginus describes the distance between the (northern) Tropical Circle to the Equatorial Circle as being ‘four parts’ (*quattuor de reliquis partibus sumptis*). See *De astronomia*, I, vi, 2; ed. LE BŒUFFLE 1983, p. 8 and VIRÉ 1992, p. 7. Hyginus also offers a resumé of all the parallels in *De astronomia*, I, vi, 3.

- vv. 32-33 The author is restating here that the different parts of the bodies of the constellations can be used to locate this 'net' of Circles.
- v. 34 Of the celestial Circles, the only one that is visible is the Milky Way.¹⁶ This description of the brightness of this feature recalls the Aratean description of the Milky Way, and is a consistent feature of all the texts deriving from and related to the *Phaenomena*.¹⁷
- v. 35 The description of the Milky Way touching the 'gates of the sky' can be traced to Macrobius, who says that the Milky Way 'girdles the zodiac, its great circle meeting it obliquely so that it crosses the two

¹⁶ See, for example, Macrobius, *Commentarii in somnium Scipionis*, I, xv, 2: *Est autem lacteus unus e circis qui ambiunt caelum: et sunt praeter eum numero decem, de quibus quae dicenda sunt proferemus, cum de hoc competens sermo processerit. Solus ex omnibus hic subiectus est oculis, ceteris circulis magis cogitatione quam visu comprehendendis* ('The Milky Circle, indeed, is only one of the ten circles that girdle the celestial sphere: there are besides it ten others, which will be discussed fully when the time comes. It is the only one of the circles visible to the eye, the other being apprehended in the mind and not seen'). Ed. WILLIS 1994, p. 61 and English transl STAHL 1952, p. 149.

¹⁷ See Aratus, *Phaenomena*, 469-79: 'If ever on a clear night, when all the brilliant [470] stars are displayed to men by celestial night, and at new moon none of its course is dimmed, but all shine sharply in the darkness – if ever at such a time a wondering has come into your mind [474] when you observed the sky split all the way round in a bright circle, or someone else standing beside you has pointed out to you that star-emblazoned wheel (men call it the Milk), no other circle that rings the sky is like it in colour, but two of the four are equal to it in size, while the others as they turn are much smaller'. Ed. and English transl KIDD 1997, pp. 106-09. The Latin renderings by Cicero (vv. 245-252, ed. SOUBIRAN 1972, p. 180) and Germanicus (vv. 455-48, see LIPPINCOTT 2019c, pp. 139 (German transl. Peter Diemer), 332 (English) and 434 (Latin)) are much less evocative. Hyginus, slightly oddly, says that the Milky Way is 'perpendicular' (*contrarius*) to the Equator (*De Astronomia*, I, vi, 3). See also Geminus, who describes the position of the Milky Way as being λοξός or 'oblique' (V, 68-69; ed. AUJAC 1975, p. 33 and English transl EVANS 1998, p. 93). Manilius says that it lies 'crosswise' (*adversum*) to the ecliptic (I, 684-712; ed. and English transl. GOOLD 1977, pp. 58-61). It is unlikely, however, that either Geminus or Manilius would have been available to the anonymous author of the poem.

- tropical signs, Capricorn and Cancer'.¹⁸ He notes that natural philosophers call these two extremes 'the portals of the Sun', because they mark the two Solstices.
- v. 36 The word is derived from ὀρίζω ('I divide' or 'I mark out a boundary').¹⁹ Hyginus describes the horizon as 'incertus'²⁰ and Macrobius mentions that it and the local meridian are 'not fixed on the celestial sphere, but vary with the location of the viewer'.²¹

¹⁸ Macrobius, *Commentarii in somnium Scipionis*, I, xii, 1: *Zodiacum ita lacteus circulis obliquae circumflexionis occurso ambiendo complectitur, ut eum qua duo tropica signa Capricornus et Cancer feruntur intersecet. Has solis portas physici vocaverunt, quia in utraque obviant solitio ulterius solis inhibetur accessio, et fit ei regressus ad zonae viam cuius terminus numquam relinquit* ('The Milky Way girdles the zodiac, its great circle meeting it obliquely so that it crosses it at the two tropical signs, Capricorn and Cancer. Natural Philosophers name these the "portals of the Sun" because the solstices lie athwart the Sun's path on either side, checking farther progress and causing it to retrace its course across the belt beyond whose limits it never trespasses'). Ed. WILLIS 1963, pp. 47-48 and English transl STAHL, p. 133. Stahl traces this concept back to Homer (*Odyssey*, XIII, 109-12 and XIV, 12) via the neo-Platonic filter of Porphyry (*De antro nympharum*, XXVIII). See STAHL 1952, p. 133, nn. 1 and 2.

¹⁹ See also, Sacrobosco, *Tractatus de sphaera*, II: *Orizon vero est circulus dividens inferius emispherium a superiori, unde appellatur orizon, id est terminator visum* ('The horizon is a circle dividing the lower hemisphere from the upper, when it is called "horizon", that is, "limiter of vision"'). Ed. and English transl THORNDIKE 1949, pp. 91 and 126.

²⁰ Hyginus, *De astronomia*, I, iv, 2: *Horizon appellatur is qui terminat ea quae perspicere aut non videri possunt. Hic autem incerta ratione definitur [...], pervidetur ita utcumque fuerit sphaera conlocata* ('The so-called horizon is the one that marks the boundary between the visible part and the invisible part. It is not determined with precision [...], but] it is perceived according to how one is located on the sphere'). Ed. LE BŒUFFLE 1983, p. 7 and VIRÉ 1992, p. 6 (reading *collocata*).

²¹ Macrobius, *Commentarii in somnium Scipionis*, I, xv, 15: *Duo qui ad numerum praedictum supersunt, meridianus et horizon, non scribuntur in sphaera, quia certum locum habere non possunt, sed pro diversitate circumspicientis habitantisve variantur* ('The two [circles] that remain to complete the number given above are the meridian and the horizon. These are not fixed on the celestial sphere but vary with the location of the observer'). Ed. WILLIS 1963, p. 63 and English transl STAHL 1952, p. 151.

- vv. 37-38 The idea of six signs always being visible above the horizon while six signs lie below it appears in both Hyginus and Macrobius.²²
- v. 39 According to Macrobius, the ten celestial Circles are the Ecliptic, the five parallels (the Arctic and Antarctic Circles, the two Tropics and the Equator); 2 colures; and the meridian and the horizon.²³
- vv. 40-41 The author refers to the 'Southern Circle', and the 'Northern Circle' here, and even though words such as *Arcticus* and *Australis* are used in the poem, it should be understood that these actually indicate the geographically-dependent Ever-Visible and Ever-Invisible Circles, located at the extreme north and south of the sky – rather than the fixed co-ordinates of the Arctic and Antarctic Circles we might recognise today. From the latitudes in which most of these Classical authors were writing, the constellations they describe as being contained within the Ever-visible Circle never disappeared below the horizon, so were always visible in the night sky. The opposite was true for those constellations in the far south, which always remained below the horizon and were 'Ever-invisible'. As Hyginus and Macrobius note, however, the accepted convention is that these Circles set at 6 parts (*i.e.*: 36° distant) from the Northern and Southern Poles.²⁴
- v. 42 All the constellations between the Ever-Visible and Ever-Invisible Circles, appear and disappear from our sight as the skies revolve overhead.

²² Hyginus, *De astronomia*, IV, x: *Mundus enim ipse semel in die ac nocte verti videtur. Itaque evenit ut ipsa signa duodecim semel in die ac nocte videri possint* ('For the world itself visibly completes one single revolution in a day and a night. The result of which is that, for their part, the 12 signs can be seen once during the day and once during the night'). Ed. LE BŒUFFLE 1983, p. 128 and VIRÉ 1992, p. 138. See also, Macrobius, *Commentariū in somnium Scipionis*, I, xv, 17 and Ptolemy, *Almagest*, I, 5 (English transl TOOMER 1984/1998, p. 42 (= H 19)).

²³ Macrobius, *Commentariū in somnium Scipionis* I, XV, 8-19. See also the convenient resumé in STAHL 1942, p. 236.

²⁴ See Appendix III, n. 12, above.

- vv. 43-46 These are the constellations used to define what the author calls the Arctic Circle, or (as mentioned above) the 'Ever-Visible Circle'.²⁵
- v. 46 *Basis siliquatrensis* refers to the base of Cassiopeia's seat. Etymologically, *siliquastrum* has botanical connections to the herb pepperwort, also known as the 'Judas Tree', which has led some scholars to assume, incorrectly, that it refers to the plant or palm frond sometimes depicted as being held in Cassiopeia's hand.²⁶

²⁵ Compare Hyginus, *De astronomia*, IV, vi, 2: *Arcticum igitur orbem sustinet caput Draconis cum reliqua corporis parte. Cepheus autem pectore suo circulum iungit. Eodem orbe nituntur et pedes maioris Ursae, praeterea sedile Cassiopeiae cum pedibus eius nititur ipso circulo, et dextra planta genuque sinistro et pedis prioribus digitis is qui Engonasin vocatur, et manus sinistra Bootis exteriori parte circuli pervenit coniuncta* ('Therefore, the Arctic Circle supports the head of the Dragon with the rest of his body; Cepheus touches the circle with his chest; the feet of Ursa Maior also lean on the same circle; moreover, the seat of Cassiopeia with her feet rest on the circle itself; also the right foot, [and] the left knee and the end of the toes of the foot of he who is called the Kneeler [Hercules]; [and] the right hand of the Herdsman [Bootes], which manages to touch the exterior of the circle'). Ed. LE BŒUFFLE 1983, p. 123 and VIRÉ 1992, p. 134. Some editors have suggested *dextro pede* for LeBœuffle's and Viré's *dextra planta*. See also the variant description in Hyginus, *De astronomia*, IV, iii, 3.

²⁶ See for example, ALLEN 1899/1963, p. 144, citing LA LANDE 1764/1792³, p. 213. LE BŒUFFLE argues that it is an alternative word for 'chair' or 'throne' and cites its usage in Hyginus, *De astronomia* (II, 10: *Pro quo facto inter sidera sedens in siliquastro constituta est*; and III, 9: *Cassiopeia sedens in siliquastro conlocata est*) and in our poem. See LE BŒUFFLE 1987, p. 236, (no. 1106). The shape or material from which this particular kind of chair was made remains a mystery. Varro simply describes a *siliquastrum* /*siliquastrum* as a type of chair (*De lingua latina*, V, 128).

- vv. 47- 59 The term 'Solstitial' here is slightly irregular, but the constellations the author lists closely follow those that Hyginus uses to define the so-called 'Summer Circle', or the Tropic of Cancer.²⁷
- v. 51 Note the odd mistake here. The reference should be to Andromeda, as the head of Andromeda and the belly of Pegasus share a star, α And.²⁸

²⁷ Compare Hyginus, *De astronomia*, IV, ii, 1: *In aestivo circulo, de quo primum dicere instituimus, haec signa sive partes eorum perspiciuntur: capita Geminorum, Aurigae genu utrumque sinistrumque Persei crus et humerus sinister. Andromeda autem a pectore et manu sinistra dividitur, atque ita evenit, ut caput eius cum toto pectore et manu dextra videatur esse inter aestivum et aequinoctialem circulum, reliquum autem corpus inter aestivum et arcticum finem. Praeterea in eodem aestivo circulo pedes equi Pegasi positi videntur, et caput a reliquo corpore dividitur Oloris et alae sinisterioris ut volantis pars non magna. Ophiuchus humeris hunc circulum sustinere videtur ex una parte, id est aequinoctiali, ex altera parte Hercules pari ratione. Virgo prope hunc coniungens capite, inter hunc et aequinoctialem circulum collocata est, ut fulgens ad austrum. Leo a pectore ad lumbos dividitur, ut caput eius et corporis superior a cruribus pars inter hunc et arcticum circulum videatur, inferior autem pars inter aestivum et aequinoctialem. Cancer autem sic dividitur medius, ut inter oculos eius circulus traiectus videatur* ('On the summer circle [...] here are the constellations or their parts that one might notice: the heads of Gemini; the knees of the Auriga; the left leg and shoulder of Perseus. It cuts Andromeda through her chest and her left hand (and it follows that her whole chest and her right hand are visible between the Summer and Equinoctial Circles; and the rest of her body is between the Summer and Arctic Circles). Moreover, on the same Summer Circle, the hooves of the Horse Pegasus seem to be placed; the head of Cygnus is separated from the rest of his body, except for one small part of the left wing that seems to hover [over it]; Ophiuchus seems to support with his shoulders the Circle on one side (namely, the equinox), while on the other side it is Hercules who does the same; Virgo nearly touches her head [on it] and she is located between this Circle and the Equinoctial Circle, sparkling in a southerly direction; Leo is divided from his chest to his rump, so that his head and the upper part of his body above the legs/paws can be seen between the Arctic Circle and this one; the lower part is between the Summer and Equinoctial Circles; Cancer is neatly divided through its middle, so that the Circle seems to run between its eyes'). Ed. LE BŒUFFLE 1983, pp. 115-16 and VIRÉ 1992, pp. 126-27 (omitting *ex una parte ... pari ratione* and reading *existimetur* for *videatur*).

²⁸ See Ptolemy, *Almagest* (English transl TOOMER 1984/1998), p. 358. It is interesting to note that one of the other 'Hyginian poems', Priscian's *Ad boreae partes arcti*, also has the slightly odd reference to the 'star of Andromeda' set between Deltoton and Pegasus (... *Deltoton et Andromeda astrum, / Pegasus et Delphin Telumque...*). See APPENDIX III, n. 3 above).

- vv. 60-68 These are the markers for the Celestial Equator.²⁹
- vv. 62-63 The allusion to the gods scattering urine on a rotting skin is a reference to the catasterismic myth associated with Orion, who was born from the skin of an ox, which has been urinated upon by Jove and Mercury and buried in the ground for nine months, in order to give a much-wanted child to a certain Hyreus in return for his hospitality.³⁰

²⁹ Compare Hyginus, *De astronomia*, IV, iii, 1: *Aries totus omnibus pedibus innixus videtur. [...] IV, iii, 2: ... In eodem Tauri genua ut fixa perspiciuntur, etsi nonnulli ita finxerunt, ut uno genu, hoc est dextro nixus, sinistro pede contingere videatur, de hoc in medio relinuemus. Sed in eodem circulo zona Orionis, ut ipso circulo praecinctus existimetur; Hydra flexu a capite primo, ut cervicibus erectis Cancrum contingere videatur, et ex inferiore corpore Hydrae Crater cum Corvo velut fixus esse circulo conspicitur. Item paucae stellae Chelarum eodem adiunguntur. Ophiuchi genua eodem circulo a reliquo corpore dividuntur. Aquila sinisteriore penna paene coniungens figurata est, eodemque circulo caput Pegasi cum cervicibus nititur* ('The whole of Aries seems to lean upon it with all his hooves [...]. ... the knees of Taurus seem to be fixed on it, and according to some representations, he seems to be supported on [only] one knee, that is the right one (we will leave the debate undecided). But the same Circle carries the belt of Orion, so that the Circle itself gives the impression of encircling him; Hydra with the first curve after its head, so that he appears with his head held erect; it touches Cancer; and the lower part of Hydra with Crater and Corvus give the impression of being fixed on the circle. In the same way, a few stars of the Claws are joined to the same [area]. The Circle separates the knees of Ophiuchus from the rest of his body; Aquila nearly touches his left wing on this image; and the head of Pegasus with his neck also presses upon this circle'). Ed. LE BŒUFFLE 1983, pp. 118-20 and VIRÉ 1992, pp. 129-30.

³⁰ See Hyginus, *De astronomia*, II, 34.

- vv. 69-76 These are the markers for the Winter Circle or the Tropic of Capricorn.³¹
- vv. 74-76 These are the markers for the southernmost ('lowest') Circle, the Antarctic or Ever-Invisible Circle.³²
- vv. 74-75 The end of the poem contains two slightly problematic lines – perhaps indicating some sort of mutilation of the original. In the Paris manuscript (BnF, lat. 12117, fol. 138r), vv. 74-55 reads:

*Ultimus aversus boreae sua sua dindima
Manibus ostendit fluvio finitus et argo*

While the Leiden manuscript (Voss. lat. 8°15, fol. 62r) reads:

*Ultimus aversus boreae sua dindima solis
Manibus ostendit fluvio finitus et argo*

³¹ Compare Hyginus, *De astronomia*, IV, iv: *Tertius ab aestivo circulo, qui hiemalis vocatur, his corporibus et eorum partibus finitur. Nam medium Capricornum dividens et pedes Aquarii, per caudam Piscicis ut traiectus videtur. Dividit etiam Leporem fugientem a cruribus et quadam parte corporis, et Canis sequentis pedes et Navis ipsius puppim, Centaurique cervices a reliquo corpore dividit. Scorpionis extrema cauda, quod acumen vocatur, eodem circulo coniungitur. Sagittarii arcus eodem orbe deformatur. Huius orbis infra terram sunt de partibus octo partes quinque, supra terram autem tres. Itaque fit brevior dies nocte, ut ante demonstravimus* ('The third from the Summer Circle is called Winter [Circle] and here are the constellations and their elements that define it. It separates Capricorn through its middle; and also the feet of Aquarius. It seems to run through the tail of the Whale [Cetus]. It also cuts off the fleeing Lepus from its legs and one part of its body; the feet of the Dog [Canis Maior] that pursues it; the stern of the Ship [Argo]; and it separates the neck of Centaurus from the rest of its body; the end of the tail of Scorpio, called the sting, is also on this Circle; and the bow of the Archer [Sagittarius] also takes shape on it'.) Ed. LE BŒUFFLE 1983, pp. 121-22 and VIRÉ 1992, p. 132. See also the similar list in Germanicus, *Aratea*, 485-95.

³² Compare Hyginus, *De astronomia*, IV, vi, 3: *Ad antarcticum circulum pervenit extrema Navis Argo pedesque Centauri posteriores adiunguntur, priores autem paene contingere et Ara videtur prope adfixa et Eridani Fluminis extrema significatio* ('The Antarctic Circle arrives the end of the ship Argo and joins the hind feet of Centaurus (the front ones barely touch it); and Ara seems almost fixed there, as well as the end of the river Eridanus'). Ed. LE BŒUFFLE 1983, pp. 123-24 and VIRÉ 1992, p. 134 (reading *affixa*).

From this, Riese was happy with *sua dindima solis*;³³ Baehrens conjectured that the first line should end: *sua lumina solis*;³⁴ and Bursian suggested: *sua sidera in* (or *ad*) *ima*.³⁵ In this case, it seems best to opt for Bursian's formula, since it coincides with the way in which the boundaries of the other Circles have been described above.

The second question is the meaning of *manibus*, and whether it comes from *manes* or *manus*. If the former, then it might indicate either the 'remains' or 'ends' of the river Eridanus, which is a common formula for describing Eridanus.³⁶ Or, possibly, it alludes to the 'ashes of the river' with a poetic reference to the ashes of the body of the fallen Phaeton.³⁷ If one chooses to read *manibus* as 'with his hands', one has to imagine Eridanus as a personified river-god, with his hands resting on the edges of the Ever-Invisible Circle. Whereas images of a personified Eridanus do not appear on any known celestial globes, they are a feature of Medieval celestial planispheres where, in several cases, the figure does appear to rest his hands on the edge of the visible sphere.³⁸

All three options seem possible, but I have opted for 'remains' as the least adventurous and, therefore, probably most plausible reading.

³³ RIESE 1870, no. 761 / 1894-1926, no. 762.

³⁴ BAEHRENS 1879-83, V (1883), p. 382.

³⁵ BURSIAAN 1869, p. 788 (note).

³⁶ See, for example Aratus, *Phaenomena*, 360: *λείψανον Ἐριδανοῦ* ('the remnant of the River'). Ed. and English transl. KIDD 1997, pp. 98-99. The idea that there are only remnants of the River remaining is due to the fable that much of its waters were evaporated when the Sun's chariot, running beyond Phaeton's control, fell into it (see n. 37 below). Hyginus, however, says that it is the 'end' (*extrema*) of the river that crosses the Circle (see n. 32, above).

³⁷ See, for example, Ovid, *Metamorphoses*, II, 367-80 and Apollonius of Rhodes, *Argonautica*, IV, 599-603.

³⁸ See, for example, the images at the edge of the maps in Boulogne-sur-Mer, Ms 188, fol. 120; Bern, Burgerbibliothek, Ms 188, fol. 11v and London, BL, Harley Ms 647, fol. 21v. It also appears in several of the much-later Renaissance 'Sicilian' copies of Germanicus's *Aratea*, where a young male figure often rests his hands on the outer boundary of the map.

APPENDIX IV – sample comparison between the *Haec doct.* descriptions, *De astronomia* (IV, ii, 1) and a selection of celestial maps

The Tropic of Cancer (according to <i>Haec doct.</i> ..., vv. 47-59)	Hyginus	Ab planisph	Basel planisph	Berlin 129 planisph	Burgo planisph	Harley 647 planisph	Munich 210 planisph	Vat. Reg lat 129 planisph	Gr 1087 planisph	Monza w hem	Gr 1087 s/w hems
Arcturus		x	x (arm)	x (feet)		x (feet)	x (hand)	x (hand)	x (hips)	x (club)	x (feet)
Hercules	x (shoulders)	x (neck)		x (head)	x	x (head)	x (head)	x (head)	x (head)	x (head)	x (head)
the wife of Cepheus		(x)	x	x	x	x		x			
the elongated Snake-holder [Ophiuchus]	x (shoulders)	x	x		x		x		x (head)		
and also half the head of the curved Snake		x	x		x	x	x		x	x	
the wife of Perseus [Andromeda]	x (chest and hand)	x (waist)	(x)		x (chest)		x (chest)	x (hips)	x (lengthwise)	x (waist)	x (knees)
to whom, however, Arctophylax [<i>sic</i> = Andromeda] is tied upside-down in the middle of Pegasus		x	x		x	x		x	x	x	
and with the feet of her husband whose left elbow is cut off [by it] with the left leg.	x	x		x (feet)	x	x	x	x		-	x
the head of Auriga	x (knees)	x (knees)	(x)	x	x (knees)	x (knees)		x (elbow)	x (knees)	-	
Auriga, who presses down on the horn of the Bull [Taurus]		x			x	x			x	-	x
it transfixes the necks of the Gemini	x	x	x	(x)	x				x (chest)	-	x
risers between the stars of the Ass-bearing Cancer	x	x	x		x				x	-	x
runs through the breast, flank and loins of the Lion [Leo]	x	x	x	x (head)	x				x (neck)		x (head)
runs through the head and right wing of the Flying Bird [Cygnus]	x (left wing)	x	x	x		x	x	x (wing)	x	-	x

In the Bern and Boulogne-sur-Mer planispheres, many of the figures are arranged artfully within the zones, somewhat compromising their co-ordinates. This also true for several of the figures within the zodiac bands of all these maps.

ABBREVIATIONS

BMC = *Catalogue of Books printed in the Fifteenth Century, now in the British Museum*, London: British Library, 1908-2007.

DBI = *Dizionario biografico degli Italiani*, ed. Alberto M. Ghisalberto, Rome: Istituto della Enciclopedia italiana, 1960 - .

GW = *Gesamtkatalog der Wiegendrucke*, Leipzig: Hiersmann, 1925 - .

HAIN = Ludwig Hain, *Repertorium bibliographicum*, Stuttgart: J.C. Cotta and Paris: Renouard, 1826-38, with numerous reprints and editions.

ISTC = British Library, Incunabula Short Title Catalogue (<http://www.istc.bl.uk>)

The Saxl Project (<http://www.thesaxlproject.com>)

STC = *Short-title Catalogue of Books printed in France and of French Books printed in other countries from 1470-1600 in the British Museum*, London: The British Museum, 1966.

USTC = Universal Short Title Catalogue (<http://www.ustc.ac.uk>)

EDITIONS

BUNTE 1875 *Hygini astronomica*, ed. Bernhardt Bunte, Leipzig: T.O. Weigeli, 1875.

CHIARINI/ GUIDORIZZI 2009

Igino. Mitologia astrale [Biblioteca Adelphi 539], eds. Giochino Chiarini and Giulio Guidorizzi, Milan: Adelphi Edizioni, 2009.

HARD 2015

Eratosthenes and Hyginus. Constellation Myths with Aratus's Phaenomena, English transl Roger Hard, Oxford: Oxford University Press, 2015.

LE BŒUFFLE 1983

Hyginus. De astronomia, ed. André Le BŒUFFLE, Paris: Les Belles Lettres, 1983.

PIACENTE 1988

C. Iulius Hyginus, Bari: Adriatica, 1988.

VIRÉ 1992

Hyginus. De astronomia, ed. Ghislaine Viré, Stuttgart-Leipzig: Teubner, 1992.

GENERAL BIBLIOGRAPHY

- ACKERMANN 2008 Silke Ackermann, 'Habent sua fata libelli – Michael Scot and the transmission of knowledge between the courts of Europe' in GREBNER/FRIED 2008, pp. 273-84.
- ACKERMANN 2009 Silke Ackermann, *Sternstunden am Kaiserhof: Michael Scotus und sein "Buch von den Bildern und Zeichen des Himmels"*, Frankfurt am Main: Lang, 2009.
- ALLEN 1899/1963 Richard Hinkley Allen, *Star Names. Their Lore and Meaning*, London: G.E. Stechert 1899. Repr. New York: Dover Publications, 1963.
- ANTONELLI 1830 Guiseppe Antonelli, *Ricerche bibliografiche sulle edizioni ferraresi del secolo XV*, Ferrara: A. Taddei, 1830.
- ARMSTRONG 1991 Lilian Armstrong, 'The Impact of Printing on Miniaturists in Venice after 1469 in *Printing the Written Word: The Social History of Books, 1450-1520*, ed. Sandra Hindman, Ithaca NY: Cornell University Press, 1991, pp. 174-202.
- ARMSTRONG 1994 Lilian Armstrong, 'The Hand-Illumination of Printed Books in Italy, 1465-1515' in *The Painted Page. Italian Renaissance Book Illumination, 1450-1550* [exhibition catalogue (London, Royal Academy of Arts and New York, The Pierpont Morgan Library), ed. J.J.G. Alexander, London-Munich: Royal Academy of Arts, 1994, pp. 35-47.
- AUJAC 1970 Germaine Aujac, 'La sphéropée ou la mécanique au service de la découverte du monde', *Revue d'histoire des sciences*, XXIII, 1970, pp. 93-107.
- AUJAC 1975 *Geminus, Introduction aux phénomènes*, ed. and French transl Germaine Aujac, Paris: Les Belles Lettres, 1975.
- AUJAC 1979 *Autolykos de Pitane, La sphère en mouvement; Levers et couchers héliques; Testimonia*, ed. and French transl Germaine Aujac with the collaboration of Jean-Pierre Brunet and Robert Nadal, Paris: Les Belles Lettres, 1979.
- BAEHRENS 1879-83 Emil Baehrens, *Poetae latini minores*, Leipzig: B.G. Teubner, 1879-83.
- BARUFFALDI 1777 Girolamo Baruffaldi, *Della tipografia ferrarese dell'anno MCCCCLXXII al MD. Saggio. letterario bibliografico*, Ferrara: Giuseppe Rainaldi, 1777.
- BAUER 1983 Ulrike Bauer, *Der Liber Introductorius des Michael Scotus in der Abschrift Clm 10268 der Bayerischen Staatsbibliothek München: Ein illustrierter astronomisch-astrologischer Codex aus Padua, 14. Jahrhundert*, Munich: Tuduv, 1983.
- BETHMANN 1843 Ludwig Bethmann, 'Reise durch die Niederlande, Belgien und Frankreich vom Juni 1839 bis September 1841' and '2. Handschriften aus der Universitätsbibliothek in Leiden', *Archiv der Gesellschaft für ältere deutsche Geschichtskunde...*, VIII, 1843, pp. 25-101 and pp. 570-78.

BLUME/HAFFNER/METZGER 2013 and 2016

- Dieter Blume, Mechthild Haffner and Wolfgang Metzger, *Sternbilder des Mittelalters: der gemalte Himmel zwischen Wissenschaft und Phantasie*, I (1-2), Berlin: Akademie Verlag, 2012; and II (1-3) Berlin - Boston: Walter de Gruyter, 2016.
- BÖKER 1956 Robert Böker, *Die Entstehung der Sternsphaere Arats*, Berlin: Akademie Verlag, 1952.
- BROWN 1891 Horatio F. Brown, *The Venetian Printing Press. An Historical Study Based Upon Documents for the Most Part Hitherto Unpublished*, London: J.C. Nimmo, 1891.
- BROWN 1949/1977 Lloyd A. Brown, *The Story of Maps*, London: Little, Brown and Company, 1949. Repr. New York: Dover Publications, 1977.
- BUNTE 1876 Bernhardt Bunte, 'Ueber eine französische Bearbeitung der Astronomie des Hyginus', *Archiv für das Studium der neueren Sprachen und Literaturen*, LVI 1876, pp. 155-86.
- BURNETT 1994 Charles S.F. Burnett, 'Michael Scot and the transmission of scientific culture from Toledo to Bologna via the court of Frederick II Hohenstaufen' in *Micrologus. II. Le scienze alla corte di Federico II / Sciences at the Court of Frederick II*, Lausanne: Brepols, 1994, pp. 101-26.
- BURSIAN 1869 Conrad Bursian, 'Zu Hyginus. Besprechung von Carolus Lange, De nexu inter C. Julii Hygini ...', *Jahrbücher für classische Philologie*, XI, 1869, pp. 761-788.
- BYVANCK 1931 A. W. BYVANCK, *Les principaux manuscrits à peintures de la Bibliothèque royale des Pays-Bas et du Musée Meermanno-Westreenianum à La Haye*, Paris: Pour les membres de la Société française de reproductions de manuscrits à peinture, 1924 - (vol. 15 = Paris 1931).
- BYVANCK 1949 A. W. BYVANCK, *De platen in de Aratea van Hugo de Groot: With a summary: The illustrations in the Aratea of Hugo Grotius, and a list of illustrated astronomical manuscripts*, Amsterdam: Noord-Hollandsche Uitg. Mij., 1949.
- CITTADELLA 1873 Luigi Napoleone Cittadella, *La stampa in Ferrara. Memoria*, Rome -Turin-Florence: Fratelli Bocca, 1873.
- DEGENHART/SCHMIDT 1968-82 Erhard Degenhart and Annegrit Schmitt, *Corpus der Italienischen Zeichnungen 1300-1450*, 4 vols., Berlin: Mann, 1968-82.
- DEKKER 2013 Elly Dekker, *Illustrating the Phaenomena. Celestial Cartography in Antiquity and the Middle Ages*, Oxford: Oxford University Press, 2013.

- DE LA MARE 1973 Albinia de la Mare, *The handwriting of the Italian humanists*, Oxford: Oxford University Press, 1973.
- DELISLE 1896 Léopold Delisle, 'Notice sur les manuscrits originaux d'Adémar de Chabannes', *Notices et extraits des manuscrits de la Bibliothèque nationale et autres bibliothèques*, XXXV, 1896, pp. 241-358.
- DELLA CASA 1962 Adriana della Casa, *Nigidio Figulo* [Nuovi saggi, 42], Rome: Edizioni dell'Ateneo, 1962.
- DE SIMONE 2004 Daniel De Simone, *A Heavenly Craft: The Woodcut in Early Printed Books: Illustrated Books purchased by Lessing J. Rosenwald at the Sale of the Library of C.W. Dyson Perrins* [= exh. catalogue for the Grolier Club, New York, Dec. 2004; the Library of Congress, Washington, D.C., Apr. 2005; and Bridwell Library, Southern Methodist University, Texas, Sept. 2005], New York: Braziller, 2004.
- DUIITS 2005 Rembrandt Duiits, 'Celestial Transmissions. An Iconographical Classification of Constellation Cycles in Manuscripts (8th-15th Centuries)', *Scriptorium*, LIX, 2, pp. 147-202.
- EDSON 1997 Evelyn Edson, *Mapping Time and Space: How Medieval Mapmakers viewed their World* [The British Library, Studies in Map History, 1], London: The British Library, 1997.
- EDWARDS 1978 Glenn Michael Edwards, 'The *Liber Introductorius* of Michael Scot', PhD dissertation, University of Southern California / Los Angeles CA, 1978.
- EDWARDS 1985 Glenn Michael Edwards, 'The Two Redactions of Michael Scot's *Liber Introductorius*', *Traditio*, XLI, 1985, pp. 329-40.
- EVANS 1998 James Evans, *The History and Practice of Ancient Astronomy*, New York-Oxford: Oxford University Press, 1998.
- EISENSTEIN 1979 Elizabeth Eisenstein, *The Printing Press as an Agent of Change: Communications and Cultural Transformations in early modern Europe*, 2 vols., Cambridge-New York: Cambridge University Press, 1979.
- FONTAINE 1959-83 Jacques Fontaine, *Isidore de Seville et la culture classique dans L'Espagne wisigothique*, 3 vols., Paris: Études Augustiniennes, 1959-1983.
- FUMAGALLI 1905/1966 Giuseppe Fumagalli, *Lexicon typographicum Italia*, Florence: L.S. Olschki, 1905. Repr. with additions and corrections, Florence: L.S. Olschki, 1966.
- GABORIT- CHOPIN 1967/68
Danielle Gaborit-Chopin, 'Les dessins d'Adémar de Chabannes', *Bulletin archéologique du Comité des travaux historiques et scientifiques*, n.s. III, 1967, pp. 163-225. Repr. Paris: Bibliothèque nationale, 1968.

- GABORIT- CHOPIN 1969
Danielle Gaborit-Chopin, *La Décoration des manuscrits à Saint-Martial de Limoges et en Limousin du IXe au XIIe siècle* [Mémoires et documents publiés par la Société de l'École des Chartres, 17], Paris: Droz, 1969.
- GERULAITIS 1976 Leonardas Gerulaitis, *Printing and Publishing in Fifteenth-Century Venice*, Chicago IL: American Library Association, 1976.
- GOOLD 1977 *Manilius Astronomica*, ed. and English transl G.P. Goold, Cambridge MA: Harvard University Press/ London: William Heineman Ltd: 1977.
- GREBNER 2008a Gundula Grebner, 'Der *Liber Nemroth*, die Fragen Friedrichs II. an Michael Scotus und die Redaktionen des *Liber particularis*', in GREBNER/FRIED 2008, pp. 285-98.
- GREBNER 2008b Gundula Grebner, 'Der *Liber Introductorius* des Michael Scotus und die Aristotelesrezeption. Der Hof Friedrichs II. als Drehscheibe des Kulturtransfers' in *Kaiser Friedrich II (1194-1250), Welt und Kultur des Mittelmeerraums* [exhibition catalogue, Oldenburg Landesmuseum für Natur und Mensch, 2008], eds. Mamoun Fansa and Karen Ermete, Mainz: Philipp von Zabern, 2008, pp. 251-57.
- GREBNER/FRIED 2008 *Kulturtransfer und Hofgesellschaft im Mittelalter. Wissenskultur am sizilianischen und kastilischen Hof im 13. Jahrhundert*, eds. Gundula Grebner and Johannes Fried, Berlin: Akademie Verlag, 2008.
- GUIDETTI/SANTONI 2013
Antiche stelle a Bizanzio. Il codice Vaticano greco 1087 [Seminari e Convegna, 32], eds. Anna Santoni and Fabio Guidetti, Pisa: Edizioni della Normale, 2013.
- HASPER 1861 L.W. Hasper, *Hyginus Philosophus. De imaginibus coeli (d.i. das dritte Buch des Poëticon Astronomicum des C. Julius Hyginus), nach einer Pariser von den im Druck erschienen völlig verschiedenen Handschrift zum erstenmal herausgegeben*, Leipzig: Dyk'sche Buchhandlung, 1861.
- HAYE 1997 Thomas Haye, *Das lateinische Lehrgedicht im Mittelalter: Analyse einer Gattung* [Mittelateinische Studien und Texte, 22], New York- Leiden: Brill, 1997.
- HAYE 2007 Thomas Haye, 'Die Astronomie des Hyginus als Objekt hochmittelalterlicher Lehrdichtung', *Sudhoffs Archiv*, XCI, 2007, pp. 99-117.
- HIATT 2007 Alfred Hiatt, 'The map of Macrobius before 1100', *Imago Mundi*, LIX, 2, pp. 149-76.

- HIND 1935 Arthur M. Hind, *An Introduction to a history of the woodcut, with a detailed survey of the work done in the fifteenth century*, London: Constable and Company, 1935.
- HUXLEY 1981 George Huxley, 'Autolycus of Pitane' in *DSB*, II (1981), pp. 338-39.
- HÜBNER 2009 Wolfgang Hübner, 'Ein Sternbild zu viel. Zu einem neuentdeckten Lehrgedicht aus dem 13. Jahrhundert', *Sudhoffs Archiv*, XCIII, 2009, pp. 83-86.
- KAUFFMANN 1888 *De Hygini Memoria scholiis in Ciceronis Aratum Harleianis servata*, ed. Georg F. Kauffmann, Breslau: Guglielmus Koenner, 1888.
- KENDALL/WALLIS 2016 *Isidore of Seville. On the Nature of Things* [Translated Texts for Historians, 66], English transl by Calvin B. Kendall and Faith Wallis, Liverpool: Liverpool University Press, 2016.
- KIDD 1997 *Aratus. Phaenomena*, ed. and English transl Douglas Kidd, Cambridge: Cambridge University Press, 1997.
- KRISTELLER 1963-97 P.O. Kristeller, *Iter Italicum: A finding list of uncatalogued or incompletely catalogued humanistic manuscripts of the Renaissance in Italian and other libraries*, London: Warburg Institute, 1963-97
- LA LANDE 1764/1792³ Jérôme La Lande, *Astronomie*, Paris: Desaint et Saillant, 1764. 3rd edn. Paris: chez la veuve Desaint, 1792.
- LANDES 1995 Richard Landes, *Relics, Apocalypse, and the Deceits of History. Ademar of Chabannes, 989-1034*, Cambridge MA: Harvard University Press, 1995.
- LANDAU/PARSHALL 1994 David Landau and Peter Parshall, *The Renaissance Print, 1470-1550*, New Haven CT - London: Yale University Press, 1994.
- LE BŒUFFLE 1965 André Le Bœuffle, 'Recherches sur Hygin', *REL*, XLIII, 1965, pp. 275-94.
- LE BŒUFFLE 1983 André Le Bœuffle, *Astronomie. Astrologie. Lexique Latin*, Paris: Picard, 1987.
- LIEFTINCK 1964-65 Gerard I. Lieftinck, *Manuscripts datés conservés dans les Pays-Bas [...]. I: Les manuscrits d'origine étrangère (816-c. 1550)*, Amsterdam: North-Holland Publishing Co, 1964-65.

- LIPPINCOTT 1993 Kristen Lippincott, 'Pegasus und seine himmlischen Gefährten im Wandel der Zeiten', *Pegasus und die Kunst* [Katalogbuch für Aufstellung im Museum für Kunst und Gewerbe Hamburg, 3 April - 31 Mai 1993], eds. Claudia Brink and Wilhelm Hornbostel, Munich: Deutscher Kunstverlag, 1993, pp. 36-45. English transl. *Pegasus and the Arts*, transl. by Elizabeth Clegg, Eileen Martin, et al., Munich: Deutscher Kunstverlag, 1993.
- LIPPINCOTT 2006 Kristen Lippincott, 'Between Text and Image: Incident and accident in the history of astronomical and astrological illustrations' in *L'Art de la Renaissance entre science et magie*, eds. Philippe Morel, Francesca Alberti and Virginie Schmitt, Rome: L'Académie de France à Rome – Somogy editions, 2006, pp. 3-34.
- LIPPINCOTT 2009 Kristen Lippincott, 'The Problem with Being a Minor Deity: the Story of Eridanus' in *Images of the Gods. Papers of a conference in Memory of Jean Seznec* (3-4 December 2004) [Warburg Institute Colloquia, XIV], eds. Rembrandt Duits and François Quiviger, London: The Warburg Institute and Turin: Nino Aragno, 2009, pp. 43-96.
- LIPPINCOTT 2014 Kristen Lippincott, 'Exploring differing notions of scholarship in the eleventh century: the two earliest extant illustrated manuscripts of Hyginus's *De astronomia*', *Source. Notes in Art History*, XXXIII, 3, 2014, pp. 11-18.
- LIPPINCOTT 2017 Kristen Lippincott, 'Hyginus, Michael Scot (?) and the tyranny of technology in the early Renaissance' in *Certissima signa. A Venice Conference on Greek and Latin Astronomical Texts* [Antichistica 13 / Filologia e letteratura 2], ed. Filippomaria Pontani, Venice: Edizioni Ca' Foscari, 2017, pp. 213-64.
- LIPPINCOTT 2019a Kristen Lippincott, 'The Latin *Aratea* and their "Fellow Travellers"' in *The Stars in the Classical and Medieval Traditions*, eds. Alena Hadravová, Petr Hadrava and Kristen Lippincott, Prague: The Institute of Czech Academy of Sciences/Astronomical Institute of the Czech Academy of Science/ Scriptorium, 2019, pp. 271-359.
- LIPPINCOTT 2019b Kristen Lippincott, 'An Early Renaissance View of the Heavens: Text and Image in Domenico Bandini's *De celo et signis celestibus*' in *Götterhimmel und Künstlerwerkstatt. Perspektiven auf die Kunst der italienischen Renaissance*, eds. Julia Dellith, Nadja Horsch and Daniela Roberts, Leipzig: Leipziger Universitätsverlag, 2019, pp. 33-65.
- LIPPINCOTT 2019c Kristen Lippincott, *Sternbilder der Antike. Die sogenannte 'Aratea' des Germanicus und andere Texte. MS 735C. Aberystwyth, National Library of Wales, Kommentar zur Faksimile-Edition = Images of the Ancient Heavens. The 'Aratea' ascribed to Germanicus and other Texts. MS 735C. Aberystwyth, National Library of Wales, Commentary to the Facsimile Edition with Latin editions with English translations of the Texts*, Luzern: Quaternio, 2019.

- LOWRY 1979 Martin Lowry, *The World of Aldus Manutius. Business and Scholarship in Renaissance Venice*, Oxford: Blackwell, 1979.
- LOWRY 1991 Martin Lowry, *Nicholas Jenson and the rise of Venetian publishing in Renaissance Europe*, Oxford: Blackwell, 1991.
- LUZ 2010 Christine Luz, *Technopaignia. Formspiele in der griechischen Dichtung* [Mnemosyne supplements, 324], Leiden-Boston: Brill, 2010.
- McGURK 1966 Patrick McGurk, *Catalogue of astrological and mythological illuminated manuscripts of the Latin Middle Ages. IV, Astrological manuscripts in Italian libraries (other than Rome)*, London: Warburg Institute, University of London, 1966.
- McKITTERICK 2003 David McKitterick, *Print, Manuscript and the Search for Order, 1450-1830*, Cambridge: Cambridge University Press, 2003.
- MCKITTERICK 2014 David McKitterick, 'What Is the Use of Books without Pictures? Empty Space in Some Early Books', *La Bibliofilia*, CXVI, 2014, pp. 68-82.
- MARIANI CANOVA 2001 Giordana Mariana Canova, 'L'immagine degli astri nel manoscritto medievale' in *L'uomo antico e il cosmo* [3° Convegno internazionale di Archeologia e Astronomia / Atti dei Convegni Lincei, 17. (Roma, 15-16 maggio 2000)], Rome: Accademia Nazionale dei Lincei, 2001, pp.385-401.
- MARTIN 1956 Jean Martin, *Histoire du texte des Phénomènes d'Aratos*, Paris: C. Klincksieck, 1956.
- METTE 1936 Hans Joachim Mette, *Sphaitropoia: Untersuchungen zur Kosmologie des Krates von Pergamon: mit einem Anhang, Texte*, Munich: Beck, 1936
- MUGLER 1970-72 *Archimède*, 4 vols., ed. and French transl Charles Mugler, Paris: Les Belles Lettres, 1970-72.
- NADAL/BRUNET 1983-84 Robert Nadal and Jean-Pierre Brunet, 'Le Commentaire d'Hipparque. I. La sphere mobile', *Archives for History of Exact Sciences*, XXIX, 1983-84, pp. 210-36.

- O'DONNELL 1996 James O'DONNELL, 'Retractions' in *The Whole Book. Cultural Perspectives in the Medieval Miscellany*, eds. Stephen G. Nicholls and Siegfried Wenzel, Ann Arbor MI: University of Michigan Press, 1996, pp. 169-174.
- OROFINO 1994 Giulia Orofino, 'Il rapporto con l'antico e l'osservazione della natura nell'illustrazione scientifica di età sveva nell'Italia Meridionale' in *Intellectual Life at the Court of Frederick II Hohenstaufen* [= Symposium Papers. Center for Advanced Study in the Visual Arts, 24], ed. William Tronzo, Washington DC: National Gallery of Art, 1994, pp. 129-149.
- OROFINO 2013 Giulia Orofino, 'La trasmissione dell'iconografia di Germanico nell'Italia meridionale' in *Manoscritti scientifici miniati fra tradizione classica e modelli arabi*, eds. Teresa d'Urso and Alessandra Perriccioli Saggese, Battipaglia: Laveglia e Carlone, 2013, pp. 25-41.
- PÀMIAS 2014 Jordi PÀMIAS, 'Les Catastérismes d'Ératosthenes. Choix mythographiques et production du savoir', *Revue des Études Grecques*, CXXVII, 2014, pp. 195-206.
- PÀMIAS 2016 Jordi PÀMIAS, 'Eratosthenes' Catasterisms and *fin de siècle* German Scholarship (1878-1907)' in *Eratosthenes' Catasterisms. Receptions and Translations*, ed. Jordi PÀMIAS, Mering: Utopica, 2016, pp. 3-14.
- PÀMIAS/ZUCKER 2013 *Eratosthène de Cyrène. Catastérismes*, ed. Jordi Pàmias i Massana and French transl Arnaud Zucker, Paris: Les Belles Lettres, 2013.
- POLLARD 1914 A.W. Pollard, *Italian Book-Illustrations and early Printing: A catalogue of early Italian Books in the library of C. W. Dyson Perrins*, Oxford: Oxford University Press, 1914.
- PONTANI/LUGATO 2017 Filippomaria Pontani and Elizabetta Lugato, 'On Aldus' *Scriptores astronomici* (1499)' in *Certissima signa. A Venice Conference on Greek and Latin Astronomical Texts* [Antichistica 13 / Filologia e letteratura 2], ed. by Filippomaria Pontani, Venice: Edizioni Ca' Foscari, 2017, pp. 265-94.
- PORCHER 1950 Jean Porcher, et. al., *L'Art roman à Saint-Martial de Limoges. Les manuscrits à peintures ...* [exhibition catalogue], Limoges: Musée municipal, 1950.
- REDGRAVE 1894 G. R. Redgrave, *Erhard Ratdolt and his work at Venice*, London: Bibliographical Society at Chiswick Press, 1894.
- REEVE 1980 Michael D. Reeve, 'Some astronomical manuscripts', *Classical Quarterly*, XXX, 2, 1980, pp. 508-22.
- REEVE 1983 Michael D. Reeve, 'Aratea' and 'Hyginus' in *Texts and Transmission. A Survey of the Latin Classics*, ed. L.D. Reynolds, Oxford: Clarendon Press, 1983, pp. 18-25 and 187-89.

- RIESE 1870/1894-1926 Alexander Riese, *Anthologia Latina sive poesis latinae supplementum: Pars Prior, fasc. I, Carmina in codicibus scripta*, Leipzig: Teubner 1870; 2nd edition = eds. Fr. Bücheler and Alexander Riese, Leipzig: Teubner, 1894-1926.
- ROSS 1981 William Braxton Ross, 'Salutati's defeated candidate for humanistic script', *Scrittura e civiltà*, V, 1981, pp. 187-98.
- SANTINI 1998 C. Santini, 'Sulle tracce dei *Catasterismi* di Eratostene a Roma' in *Sciences exactes et sciences appliquées à Alexandrie*, eds. Gilbert Argoud and Jean-Yves Guillaumin, Saint-Étienne: Publications de l'Université de Saint-Étienne, 1998, p. 359-369.
- SAXL 1915 Fritz Saxl, *Verzeichnis astrologischer und mythologischer illustrierter Handschriften des lateinischen Mittelalters in römischen Bibliotheken*, Heidelberg: Carl Winters Universitätsbuchhandlung, 1915.
- SCHOLDERER 1925/1966 Victor Scholderer, 'Printing in Ferrara in the Fifteenth Century' in *Gutenberg-Festschrift, zur Feier des 25 jährigen Bestehens des Gutenberg-Museums in Mainz*, Mainz: s.n. [Verlag der Gutenberg Gesellschaft], 1925, pp. 73-78. Repr. in: *Victor Scholderer. Fifty essays in fifteenth- and sixteenth-century Bibliography*, ed. Dennis E. Rhodes, Amsterdam: M. Hertzberger, 1966, pp. 91-95.
- SCHRAMM 1943/1981 Albert Schramm, *Der Bilderschmuck der Frühdrucke*, Leipzig: Deutsches Museum für Buch und Schrift, 1920-23/ Stuttgart: K.W. Hiersemann 1924-1943 (vol. XXIII, 1943. repr: Stuttgart: A. Hiersemann 1981).
- SMITH 1875 William Smith, *A Dictionary of Greek and Roman Antiquities*, London: John Murray 1875.
- SOUBIRAN 1972 *Cicéron. Aratea. fragments poétiques*, ed. and French transl Jean Soubiran, Paris: Les Belles Lettres, 1972.
- STAHL 1942 William Harris Stahl, 'Astronomy and Geography in Macrobius', *Transactions and Proceedings of the American Philological Association*, LXXIII, 1942, pp. 232-58.
- STAHL 1952 Macrobius, *Commentary on the Dream of Scipio*, English transl W.H. Stahl, New York: Columbia University Press, 1952.
- STÜCKELBERGER 1990 Alfred STÜCKELBERGER, 'Sterngloben und Sternkarten: zur wissenschaftlichen Bedeutung des Leidener Aratus', *Museum Helveticum: schweizerische Zeitschrift für klassische Altertumswissenschaft = Revue suisse pour l'étude de l'antiquité classique = Rivista svizzera di filologia classica*, XLVII, 1990, pp. 70-81.

STÜCKELBERGER 1994

Alfred STÜCKELBERGER, *Bild und Wort: das illustrierte Fachbuch in der antiken Naturwissenschaft, Medizin und Technik*, Mainz am Rhein: P. von Zabern, 1994.

SWOBODA 1889/1964

P. Nigidii Figuli operum reliquiae, ed. Anton Swoboda, Vienna-Prague: A.M. Hakkert, 1889. Repr. Amsterdam: A.M. Hakkert, 1964.

TAMBURINI 1958

Antonio Tamburini, *Inventario dei manoscritti della Biblioteca Universitaria di Genova, introd. gennaio 1958* (unpublished typescript copy from <https://manus.iccu.sbn.it>).

THIELE 1898

Georg Thiele, *Antike Himmelsbilder*, Berlin: Weidmann, 1898.

THORNDIKE 1949

Lynn Thorndike, *The Sphere of Sacrobosco and its Commentators*, Chicago IL: University of Chicago Press, 1949.

THORNDIKE/KIBRE 1963

Lynn Thordike and Pearl Kibre, *A Catalogue of Incipits of Mediaeval Scientific Writings in Latin*, London: Medieval Academy of America, 1963.

TOOMER 1984/1998

G.J. Toomer, *Ptolemy's Almagest*, English transl G.J. Toomer, London: Duckworth, 1984. 2nd edn. Princeton: Princeton University Press, 1998.

ULLMAN 1963

Berthold Louis Ullman, *The Humanism of Coluccio Salutati*, Padua: Antenore, 1963.

ULRICH 1991

Ernst Ulrich, *Geschichte des Figurengedichts von den antiken Ursprüngen bis zum Ausgang des Mittelalters* [Pictura et poesis, I], Cologne - Weimar -Vienna, Böhlau, 1991.

VAN DE VYVER 1935

André van de Vyver, 'Les oeuvres inédites d'Abbon de Fleury', *Revue Bénédictine*, XLVII, 1935, pp. 125-69.

VAN ELS 2011

Ad van Els, 'A Flexible Unity: Ademar of Chabannes and the Production and Usage of MS Leiden, Universiteitsbibliotheek, Vossianus Latinus Octavo 15', *Scriptorium*, LXV, 1, 2011, pp. 21-66.

VAN ELS 2015

Ad van Els, 'Een leeuw van een handschrift: Ademar van Chabannes en MS Leiden, Universiteitsbibliotheek, Vossianus Latinus Octavo 15 = A lion of a manuscript: Ademar of Chabannes and MS Leiden, University Library, Vossianus Latinus Octavo 15', PhD thesis, University of Utrecht, 2015.

VAN ELS 2020

Ad van Els, *A Man and his Manuscripts: The Notebooks of Adémar de Chabannes (989-1034)*, English transl by Thea Summerfield, Leiden: Brill, 2020.

Vedere i classici 1996

Vedere i classici. L'illustrazione libraria dei testi antichi dall'antichità al tardo Medioevo, ed. Marco Buonocore, Rome: Palombi, 1996.

V-12

- VIRÉ 1981 Viré, Ghislaine, 'La transmission du *De Astronomia* d'Hygin jusqu'au XIII^e siècle', *Revue d'histoire des Textes*, XI, 1981, pp. 159-276.
- VOGELS 1884 Johann Vogels, 'Scholia in Ciceronis aliaeque ad astronomian pertinentia e cod. Mus. Brit. Harleiano 647. Pars I', *Wissenschaftliches Beilage zum Programm des Gymnasiums zu Crefeld 1884*, Crefeld: Druck von Kremer & Bauer, 1884, pp. 9-13.
- VOGELS 1887 Johann Vogels, 'Scholia in Ciceronis aliaeque ad astronomian pertinentia e cod. Mus. Brit. Harleiano 647. Pars 2', *Wissenschaftliches Beilage zum Programm des Gymnasiums zu Crefeld 1887*, Crefeld: Druck von Kremer & Bauer, 1887, pp. i-xi.
- WALTHER 1959/1969 Hans Walther, *Initia carminum ac versuum mediæ aevi posterioris latinorum. Alphabetisches Verzeichnis der Versanfänge mittellateinischer Dichtungen* [Carmina mediæ aevi posterioris Latina, 1], Göttingen: Vandenhoeck & Ruprecht, 1959; 2nd revised edn., Göttingen: Vandenhoeck & Ruprecht, 1969.
- WEHMER, 1955 Carl Wehmer, 'Ne Italo ceder videamur: Augsburger Buchdrucker und Schreiber um 1500' in *Augusta 955-1955: Forschungen und Studien zur Kultur- und Wirtschaftsgeschichte Augsburgs*, eds. Clemens Bauer, J. Bernhart, etc., Augsburg: Hermann Rinn/Institutions (Augsburg) Industrie- und Handelskammer, 1955, pp. 145-72.
- WEIS 1969 Hans Weis, *Bella bulla. Lateinische Sprachspielereien*, Bonn: F. Dümmler, 1969.
- WEITZMANN 1947/1970 Kurt Weitzmann, *Illustrations in Roll and Codex: A Study of the Origin and Method of Text Illustration* [Studies in Manuscript Illumination, 2], Princeton: Princeton University Press, 1947. 2nd edn. with additions Princeton NJ: Princeton University Press, 1970.
- WILLIS 1994 *Ambrosii Theodosii Macrobii. 2. Commentarii in somnium Scipionis*, ed. James Willis, Stuttgart: Teubner, 1994.
- WITT 1983 Ronald G. Witt, *Hercules at the Crossroads: the Life, Works, and Thought of Coluccio Salutati*, Durham, N.C.: Duke University Press, 1983.
- WITT 2000 Ronald G. Witt, *In the Footsteps of the Ancients: the Origins of Humanism from Lovato to Bruni* [Studies in Medieval and Reformation Thought, 74], Leiden: Brill, 2000.

WOODWARD 1987

David Woodward, 'Medieval Mappaemundi' in *The History of Cartography. Volume One: Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean*, ed. J.B. Hartley, Chicago: University of Chicago Press, 1987, pp. 286-370.

ZUCKER 2015

Arnaud Zucker, 'Hygin et Ératosthène. Variation mythographique ou restitution d'un original perdue', *Polymnia*, I, 2015, pp. 83-125.

ZUCKER 2017

Arnaud Zucker, 'Exploring the Relevance of the Star-positions in the Medieval Illuminated Manuscripts of Hyginus' *De Astronomia*' in *Certissima signa. A Venice Conference on Greek and Latin Astronomical Texts* [Antichistica 13 / Filologia e letteratura 2], ed. Filippomaria Pontani, Venice: Edizioni Ca' Foscari, 2017, pp. 153-212.

The curious History of the Text
and Illustrations of Hyginus's
De astronomia
by Kristen Lippincott

© Albireo Verlag Köln 2021

This work is subject to copyright. All rights are reserved by the Publisher and the Author.

This book is published together with the facsimile »C.J. Hyginus *Poeticon Astronomicum*, Venice 1482«, which
will be published by Albireo Verlag Cologne in 2021.
ISBN 978-3-9816040-8-5

www.albireo-verlag.de