

Basel
Öffentliche Bibliothek der Universität

AN. IV. 18

Germanicus *Aratea* with *scholia Basileensia*

Fulda

early 9th century (820-35)

The text of Basel AN IV 18 is one of the earliest and most important versions of the Germanicus *Aratea* and exists as the touchstone of one of the major branches of the so-called 'O family' of manuscripts (which Breysig 1867 calls the 'Oⁱ family' and Gain, p. 2, called 'the O family, v branch'). The *scholia*, which were first published by Breysig as the *scholia Basileensia* (cf. pp. 55-104) is also amongst the oldest.

text

- ff. 11r- 40v Germanicus, *Aratea* with *scholia Basileensia*
- fol. 1r Liber astronomie claudii cesaris xlvi. 02
- ff. 2r- partial version of *Aratus latinus* of sections IIIb, I, IIa, IIb, IIIa and VII (not illustrated)
- ff. 2r-3r ALIA DESCRIPTIO praefationis. Subtus terra ubi adorantur signa vii. — necnon sagittarium pisces caetus. orionem. (cf. Maass 1898, 105-39)
- ff. 3v-6r OSTENSIONEM QUOQUE DE QUIBUS VIDENTUR OPORTET FIERI ad austrum ex adverso habens septentrionem. a dextris orientem — possit. quorum ab eo dicta sunt. (cf. Maass 1898, pp. 102-26)
- fol. 6r erat ost^henis de circa exornatione stellarum & ethymologia de quibus videntur. haec autem sunt ad aquilonem — laepus navis fluvius pisces. V. stellae erraticae. (cf. Maass 1898, 134-35)

- fol. 6r ipparchus de magnitudine & positione errantium stellarum. constat autem In aquilonio semipherio haec – aries taurus gemini (cf. Maass 1898, 137-39)
- ff. 6r - 7v quibus aratis videntur quedam sunt secundum cęlj stellarum– quia simili modo in ipsum suggerunt; (cf. Maass, pp. 140-44)
- ff. 8r-8v INVOLUTIO SPHERAE. Hic est stellarum ordo – conexio piscium communem habent stellam. (cf. Maass 1898, pp. 155-61 and Breysig 1897, pp. 107-09 and 224-25)
- ff. 8v-9v tantoque ordine fingitur natura deorum mortalium partim autem videntur namque sine matre Minerva decreunt mortalibus mundi aut solis – a saeculi sursus quem non pensavit suae facturae [natura] primum autem ordinem – mars vero et honifica venus deorum [new hand] amercurius quoque et saturnis exigent circuli vias per septenarium numerum figuram indi [] cane .. ex circularem (with 12 signs of zodiac described in text [source ? CHECK])
- ff. 10r-10v blank
- fol. 11r AB IOVE principium magno deduxit aratus
Carminis at nobis genitor tu maximus auctor ... (cf. Breysig 1897, p. 1; Gain 1976, p. 21)
- fol. 11r *scholia Basileensia* begins : Quaeritur quare abiuo (with iuo crossed through) iove coepit & non a musis ut homerus ...

note: This section appears to end on fol. 11v with : ... & non solum hominem sed etiam deorum. (cf. Breysig 1897, p. 58). At the bottom of this page, there is a reference to the date of the manuscript: anno quinto decimo Imperii a[...].)
- fol. 12r blank
- fol. 12v (text recommences with:)
CAEtera quae toto fulgent vasa sidera mundo ... (= Germanicus, Aratea, v.17)
- fol. 13r *scholia* continues on fol 13r: hanc hesiodus dicit lycaonis filiam...

(note: on fol. 18v, vv. 146-47 appear below the picture of Virgo:
QUAM MEDIA EST HELICE SUBIECTUM RESPICE CANCRUM
ACCIPITIS SUBERUNT GEMINI QUA POSTERIOR PES.

then, there is *scholia* on ff. 18v-20r

then vv. 146-47 are repeated on the top of fol. 20v:

QUAM MEDIA EST HELICE SUBIECTUM RESPICE CANCRUM
ACCIPITI SUBERUNT GEMINI QUA POSTERIOR PES
HORRENTISQUE IUBAS ET VULVUM CENE LEONEM
unc ubi contingerit phebī violentior axis ...)

(note: the following verses are missing from the poem:

- fol. 27v vv. 248- 50 should be below the picture of Pisces
- ff. 28r/28v vv. 255-57 are the opening lines on the Pleiades, which should have appeared at the bottom of fol. 28r (after the illustration of Perseus) or on the on fol. 28v.
- fol. 28v vv. 270-72 are the opening lines on Lyra, which should have followed a hole where the illustration for the Pleiades, but which is now filled with a reversed picture of Perseus, which has been traced from the image on the recto of the folio.
- fol. 29r vv. 278-80 are in the middle lines on Cygnus, but should have fallen right after the spot where the illustration of Lyra is at the bottom of the page
- fol. 29v vv. 284-86 are the opening lines on Aquarius and Capricorn, and should have followed the illustration of Cygnus on the bottom of the page.
- fol. 32v vv. 315-17 are the opening lines on Aquila and Sagitta, which should have followed the illustration of Sagittarius at the bottom of the page.
- fol. 33r vv. 321-23 is the whole section on Delphinus. It should have appeared before the passage of text on this folio, which has been squeezed in beside the picture of Aquila with the Sagitta.
- fol. 33v: vv. 328-30 is the last section on Orion. The lines following this *lacuna* have been squeezed in beside the picture of Delphinus.
- fol. 34 r: vv. 333-35 are the first lines on Canis Maior and should have followed the picture of Orion.
- fol. 35 r: v. 341 is the first line on Lepus and should have followed the picture of Canis Maior.

- fol. 35v: vv. 344-46 are the opening lines on Navis and should have followed the picture of Lepus.
- fol. 36r: vv. 356-58 are the opening lines on Cetus and should appear in the space after the picture of Navis.
- fol. 36v: vv. 363-65 are the opening lines on Eridanus and should have followed the picture of Cetus.
- fol. 37r: vv. 379-81 are the opening lines on Piscis Austrinus and should have appeared right after the picture of Eridanus.
- fol. 37v: vv. 393-95 are the opening lines on Ara and should have been included after the picture of Piscis Austrinus.
- fol. 38r: vv. 414-16 are the opening lines on Centaurus and should have appeared alongside the picture of Ara.
- fol. 38v: vv. 426-28 are the opening lines on Hydra and should have appeared right after the picture of Centaurus.
- ff. 39r-39v: vv. 431-32 concern Hydra, Crater and Corvus and seem to have been knocked out by an overly long section of the *scholia* on fol. 39. They should have appeared at the bottom of fol. 39r (where the picture of the three constellations has been placed) or at the top of fol. 39v.
- fol. 39v: vv. 434-36 is the section on Canis Minor and should have been inserted either at the top of fol. 39v or below the picture of Canis Minor on that folio.
- ff. 39v- 40v: vv. 440-42 are missing between these two pages, though there is plenty of space on the bottom of fol. 40r.

note: between ff. 40r and 42v, the spacing of the text is uneven, giving the impression that there may have been space left for illustrations. For example: fol. 40r ends the *scholia* with: ... & ostendisse lacte miratae effusum est circulis albispecies. (cf. Breysig 1867, p. 104), leaving the bottom half of the page blank.

fol. 40v has the lines:

Annonasque vias tardus vix praeficit orbis. —

Lacteus hic orbis nullo minor orbe rotatu.

(=Germanicus, *Aratea*, vv. 443- 458; cf. Breysig 1867, pp. 26-27)

and then a variant repetition of the end of the *scholia*, which had already appeared on fol. 40r: *Ostenditur autem unus inter circulos caeli — & ostendisse lacte mirata effusum est lacte facta est circuli albispecies.*

There is blank space at the bottom of fol. 40v and the top half of fol. 41r is blank. The text begins in the middle of fol. 41r with v. 461, indicating that vv. 459-60 are missing.

ff. 41r-42r: Aurige plantamque terit persida laevam —

Aetherias surgit tam sacris mergitur undis.

(= Germanicus, *Aratea*, vv. 462-525; cf Breysig 1867, pp. 27-31)

the text on fol. 42r continues in a smaller hand, with vv. 525-31 added in two columns and the bottom half of the page is blank.

fol. 42v begins the text after missing vv 532-34, with:

Sopito vigiles incesto donavit amore. —

Quod sine nōbe caua solis via forte latebit

(= Germanicus, *Aratea*, vv. 535-82; cf. Breysig 1867, pp. 31-34)

then:

Iuppiter est illo laeto magis hic ubique solis —

(missing vv. 80-85)

fol. 45v

Haec eadem tibi signa dabunt non inrita pisces.

(= Germanicus, *Aratea*, fragm. iii, vv. 1-163; cf. Breysig 1867, pp. 44-54)

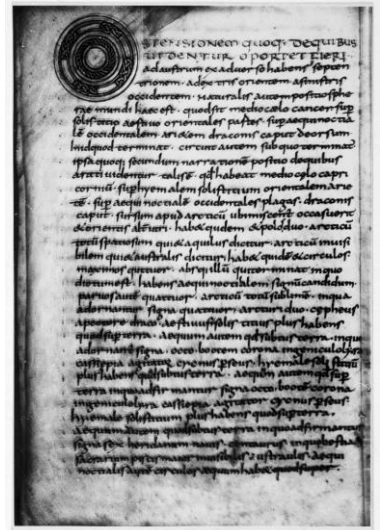
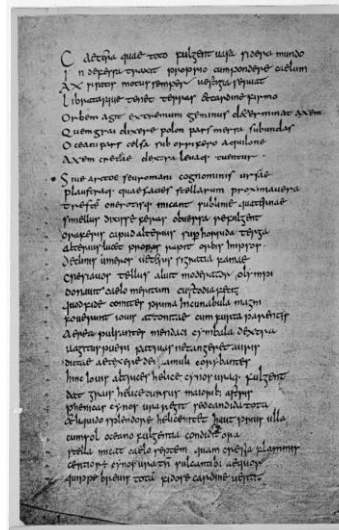
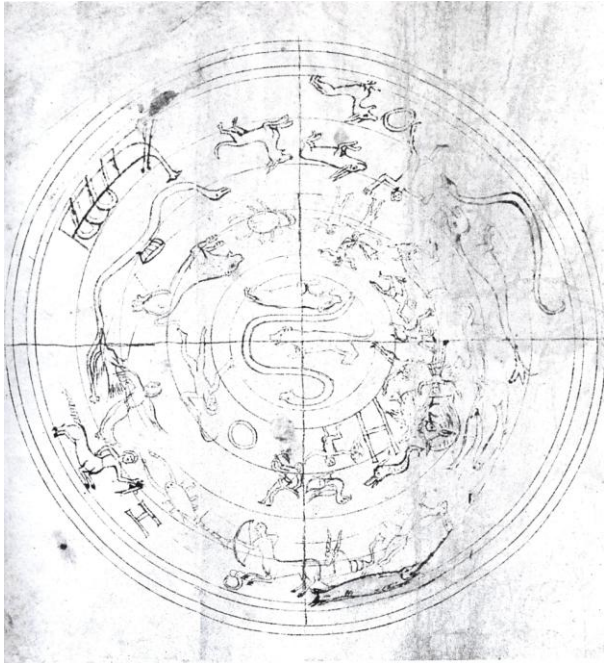
CLAUDI CAESARIS ARATI PHENO MENA EXPLICIT FELICITER D'O.

GRA TI AS. (cf. Breysig 1867, p. 54)

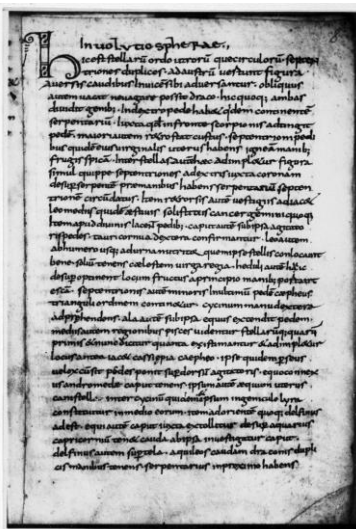
(after the explicit there is a note on the provenance:)

Honorabili domino ac patri suo C. dei gratia Fuldensis ecclesie abbati H. decanus totusque eiusdem ecclesie conventus paratam ac devotam obedientiam. (which is transcribed on fol. 46r by a later hand, but with the 'C' transcribed a 'N'.)

illustrations



fol. 3v



fol. 8r




fol. 14r



fol. 14v

15

... que postea in ...



... COSMOLOGIA ...

fol. 15r

16

... de ...



... IN ...

fol. 16r

16v

... de ...



... IN ...

fol. 16v

18v

... de ...



... IN ...

fol. 18v

20r

... de ...



... IN ...

fol. 20r

21r

... de ...



... IN ...

fol. 21r

22r

... de ...




... IN ...

fol. 22r

23v

... de ...



... IN ...

fol. 23v

24r

... de ...



... IN ...

fol. 24r

capite impla anatro sedor. habet maculae stellam
claram. in singulis unguibus singulas clares in dextra
manilla claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII



Nec prae dicitur in eo non quia conuenit in
Omnibus similitudine. Licet in eo conuenit in
Sicut in quibus humeris conuenit in modis. amb
legit in quibus loca qua conuenit in
Sicut in quibus conuenit in modis. amb
Sicut in quibus conuenit in modis. amb
Sicut in quibus conuenit in modis. amb

fol. 24v

stellam unam in unguibus singulis in dextera
manilla claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII



Ad hoc dicitur in quibus stellam in dextera
manilla claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII


fol. 25r



Quae dicitur in quibus stellam in dextera
manilla claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII

fol. 26r

in dextera unguis ad manum claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII



in dextera unguis ad manum claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII

fol. 26v

in dextera unguis ad manum claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII



in dextera unguis ad manum claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII

fol. 27r

in dextera unguis ad manum claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII



in dextera unguis ad manum claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII

fol. 27v

in dextera unguis ad manum claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII



in dextera unguis ad manum claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII

fol. 28r

in dextera unguis ad manum claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII



in dextera unguis ad manum claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII

fol. 28v

in dextera unguis ad manum claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII



in dextera unguis ad manum claram. in dextera unguis ad manum claram
magnum ad
re in sinistro
femore in mag
nu clares in ba
pau stellam
fide in corpore
in quibus clares
singulas in manu
XXII

fol. 29r

habetur in galia non amplius ac
 Quam si perit natus quod de meli depererant
 Inter copiositate nulla sibi imagine forma
 Puppis demissa tamen sicut lucida clava
 Habetur in galia non amplius ac
 Prima natus abas sibi nota dicitur dicitur
 fuisse exemplar pateris natus quoniam
 vocem caelo figuratur sed gubernat utiq; adma
 nam animi aquatit natus finit. habet stellam
 in puppe. in iocost roma. v. in malofima. in
 piscaria. v. in summa. xxi.



Quo in porta d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae
 hanc artem p'p'ia d'horae p'p'ia d'horae
 Delus saltem non nudum p'p'ia d'horae
 Habetur in galia non amplius ac

fol. 36r

moritur eius in memoria. ac si in memoria
 dicitur in galia non amplius ac
 dicitur in galia non amplius ac



Placere in galia non amplius ac
 dicitur in galia non amplius ac
 dicitur in galia non amplius ac

fol. 36v


arum et dicitur uocatur scellum exemplum
 p'p'ia d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae



In fine p'p'ia d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae

fol. 37r

Spina m'p'ia p'p'ia d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae



Operum occasi tangit tanto d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae

fol. 37v


Velut p'p'ia d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae



Super eadem filius p'p'ia d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae

fol. 38r


eius h'p'ia d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae



In primo d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae

fol. 38v

ad p'p'ia d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae



In p'p'ia d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae

fol. 39r

Sub gemis p'p'ia d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae



In p'p'ia d'horae uicina loquenti
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae

fol. 39v

Speciosus aduocatus uelbera condensa
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae

CLAUDIAE SARIS
 d'horae p'p'ia d'horae d'horae p'p'ia d'horae

fol. 45v

fol. 1v: planisphere (note that this page was removed from the manuscript in 1987 and is now housed in a separate folder.)

This preliminary study was made jointly with Elly DEKKER. An updated and corrected version will be published in her book in 2012.

The drawings are executed in light brown ink with the ecliptic and the northern and southern boundaries of the zodiacal band drawn in red. These three lines are now nearly invisible due to fading.

From the current state of preservation of the map, it seems that its separation from the manuscript was carried out to save the page from constant folding and refolding. If one compares older photographs of the map with its current state, one can see there have been significant losses on a strip about 4 cm wide running in a straight line between the mouth of Piscis and Lepus, vertically through Pegasus, Andromeda, etc., down to Orion and the two concentric circles (Anonymous Star Group I). There is also indication of a second fold (with much less damage) running vertically from the tail of Scorpio, through Boötes, the forequarters of Leo and the neck of Hydra.

Also, it is worth noting that the page was originally set and is now mounted so that Piscis and Saggiittarius appear at the top of the map, with Canis Maior, Canis Minor and Lepus at the bottom.

There are no visible compass-point holes.

Constellations:

The presentation is in globe view.

Of the 48 Ptolemaic constellations 43 are presented; missing are Aquarius, Equuleus, Libra, Sagitta and Triangulum. Though very unusual, the two H-shaped structures are intended to represent classical constellations: the one between Hercules and Cygnus is intended to be Lyra and the other, between Centaurus and Sagittarius, must be Ara. In addition, there is an anomalous animal in the place where Aquarius should be and a set of concentric circles, placed between Orion and the dachshund-like animal, which is a relatively rare depiction of the group of unnamed stars mentioned by Aratus and Germanicus. None of the constellations appear to conform to Hipparchus rule, but several are drawn in too sketchily a manner to determine orientation.

Cartography:

The planisphere has a grid consisting of concentric circles centred on the northern celestial pole. It appears as though the ever-visible circle is represented by a pair of concentric circles. The Tropic of Cancer, the Equator and the Tropic of Capricorn are demarcated by a single circle and the ever-invisible circle is, again, marked by a pair of concentric circles.

At the border of the map, there is an additional pair of concentric circles, which presumably is only decorative. When expressed as a fraction of the radius of the Equator, the radii of the Tropics of Cancer and of Capricorn are 0.74 and 1.26, respectively. The radii of the pair representing ever-visible circle are 0.38 and 0.49, respectively, so their mean value is 0.44. The radii of the pair of

ever-invisible circles are 1.48 and 1.54, respectively, so their mean value is 1.51. In addition to these circles, there are traces of two other circles eccentric with respect to the northern celestial pole. These circles represent the northern and southern boundaries of the zodiacal band. The ecliptical pole, which is the centre of these boundary circles, is located inside the innermost circle representing the ever-visible circle. When expressed as a fraction of the radius of the Equator, the distance of the ecliptical pole from the centre of the map is 0.27, and the diameter of the northern and southern boundaries of the ecliptic are 0.88 and 1.11, respectively. Finally, there are two straight lines that intersect each other perpendicularly at the equatorial pole, which, presumably, represent the colures. Although the boundaries defining the band of the zodiac are mostly too faint for it to be clearly defined, if one does try to locate the ecliptic pole from the inner edges of what remains of the circle, it appears to be placed slightly below Draco's neck and distinctly to one side of the line of the solstitial colure. This kind of mistake is not unusual in medieval maps. Therefore, one should accept that the two straight lines bisecting the planisphere are intended by the artist to represent the colures.

Locations with respect to the main circles:

- a.) Inside the 'inner' ever-visible circle: Ursa Maior, Ursa Minor and Draco. The tail of Ursa Minor and the hind feet of Ursa Maior touch this circle.
- a'.) Between the 'inner' ever-visible circle and the 'outer' ever-visible circle: the right arm of Boötes from his elbow to the tips of his fingers and the lower body of Cepheus from his waist to his feet. Both the feet of Cepheus and the fingers of Boötes touch the 'inner' ever-visible circle from the outside.
- b.) Between the 'outer' ever-visible circle and the Tropic of Cancer: Cassiopeia, Perseus, the upper part of Taurus, Auriga, the upper halves of the Gemini as far as their waists, all of Cancer (save the legs on the southern side), most of Leo (except for his left leg, the lower part of his belly, his rear flanks and the lower part of his tail), the body of Boötes (except for his right arm and the top of his staff), Corona Borealis, the head and shoulders of Ophiuchus and the head of Serpens, Hercules, the very large H-shaped image representing Lyra, Cygnus (except for his head), the upper half of Cepheus from hips to his head, and the northern half of Andromeda.
- c.) Between the Tropic of Cancer and the Equator: Aries, the muzzle, forelegs and chest of Taurus, the lower half of Gemini from their waists to their feet, the head and left arm of Orion, the ears of two of the animals that follow Orion (see entry on Lepus, Canis Maior and Canis Minor below), the southern legs of Cancer, the lower left foreleg, belly and rear haunches and rear legs of Leo, and the head of Hydra, Crater, the upper half of Virgo from her waist to her head, the tip of Boötes's club, the lower part of the bodies of Ophiuchus and Serpens, Aquila, Delphinus, Pegasus and the southern half of Andromeda.
- d.) Between Equator and the Tropic of Capricorn: Cetus, the first curve of Eridanus, Orion from his neck to his knees, two of the animals that follow Orion (see the entries for Lepus, Canis Minor and Canis Maior below), the tip of the stern of Navis, the body of Hydra, Corvus, Virgo from her waist to her feet, the head, shoulders and left hand of Centaurus, Scorpio, the bow and human part of Sagittarius, the head and tail of Capricorn, the anomalous animal in the place of Aquarius and Pisces.
- e.) Between the Tropic of Capricorn and the ever-invisible circle: one finds the snaky tail of Eridanus, the lower legs of Orion, a set of concentric circles (Anonymous Star Group I), the dachshund-like animal (see Lepus below), the main part of Navis, Centaurus from his shoulders to his feet, an H-shaped object representing Ara, Corona Austrinus, the horse part of Sagittarius, the body of

Capricorn, Piscis Austrinus, the legs of the anomalous animal (placed where one expects Aquarius) and the stream of Aquarius (which connects the ears of the animal to the mouth of Piscis Austrinus).

Within the zodiacal band, there is the body of Aries (from his neck downwards), Taurus, the knees of Auriga, the Gemini (except for the bottom of their legs and their feet), Cancer, Leo (except for the top of his head and the tip of his upraised tail), Virgo (except for the top of her head, her left wing and her right foot), the Claws and body of Scorpio (except for the 'elbow' of his northern claw and his four northern legs), Sagittarius (except for the figure of the man from his shoulders to his head), Capricorn, the anomalous animal in the place of Aquarius and Pisces.

The 'inner' ever-visible circle touches the hind feet of Ursa Maior, the tip of Draco's tail, the fingertips of Bootes and the feet of Cepheus rest upon it. The 'outer' ever-visible circle passes through the middle of Cepheus, the feet of Cassiopeia, the head of Auriga and the right elbow of Boötes.

The Tropic of Cancer passes through Taurus lengthways, the waists of Gemini, the southern part of Cancer, the lower body of Leo, the staff held by Boötes, the neck of Serpens, the shoulders of Ophiuchus, the southern ends of the H-shaped structure representing Lyra, the neck of Cygnus and through Andromeda lengthwise. The feet of Aquila rest upon it.

The equator passes through the forelegs and hindlegs of Aries at the knees, the neck and left forearm of Orion, the ears of two of the animals that follow Orion, the neck of Hydra, Crater, the chest of Virgo. It touches the back of Pegasus and the head of the northern Fish.

The Tropic of Capricorn passes through the front flippers of Cetus, the 'neck' of Eridanus, the knees of Orion, the feet of the dachshund-like animal (see entry for Lepus below), the stern of Argo, the shoulders of Centaurus, the tip of Scorpio's tail, the juncture of the two halves of Sagittarius, the neck and tip of the tail of Capricorn, and the hind part and ears of the anomalous animal in the place of Aquarius and the tail of Cetus.

The ever-invisible circle touches the feet of Centaurus and Sagittarius.

The solstitial colure passes through the rear flanks of Sagittarius, the ecliptical pole in behind the head of Draco, the equatorial pole in the shoulder of Ursa Minor, the front flanks of Ursa Maior and it touches the hind part of Lepus.

The equinoctial colure passes through the tail of Hydra, the neck of Corvus, the feet of Boötes, the bend of Draco, the equatorial pole in the shoulder of Ursa Minor and lengthwise through her body, the left arm of Cassiopeia, the feet of Andromeda, the rear quarters of Aries and the tail of Cetus.

Although the boundaries defining the band of the zodiac are too faint for most of the feature to be defined, if one does try to locate the ecliptical pole from the inner edges of the drawn circle, it appears to be placed slightly below Draco's neck, and distinctly to one side of the line of the solstitial colure.

Significant features of the constellation images:

- **Ursa Minor** [+] is a bear with a long tail, placed inside the second bend of Draco's body and looking into it. Her mouth is open and she is rushing forwards. The equinoctial colure runs through the length of her body, with her head pointing towards Virgo and the autumnal equinoctial colure.
- **Ursa Maior** [+] is a bear with a short tail, placed under the tail of Draco. The summer solstitial colure passes vertically through her shoulders. Its head is to the west of the colure with its mouth open. Its hind feet are cut by the boundary of the 'inner' ever-visible circle. Her head faces towards

Aries and the vernal equinox.

- **Draco** [-] has two bends in its body (shaped like an 'S') and its mouth is open. Its body encloses Ursa Minor completely; it continues between the backs of the two Bears and then curls around in front of Ursa Maior so that the tail ends in front of the nose of Ursa Maior on the 'outer' ever-visible circle.
- **Cepheus** [-] stands with his feet pointing towards the north, where they are very close to the tail of Ursa Minor. He appears to be naked, and has his arms outstretched to either side. He may have a halo around his head. The line of the 'inner' ever-visible circle cuts through his feet and the 'outer' ever-visible circle cuts through his middle. His left hand also rests on the edge of this 'outer' circle.
- **Boötes** [-] is directly north of Virgo, with his body almost parallel to the ever-visible circles and the Tropic of Cancer. He is nude and appears to be facing the viewer. He holds a curved stick or crook upraised in his left hand. His lowered right hand touches the rim of the 'inner' ever-visible circle and the 'outer' visible circle cuts through his right elbow.
- **Corona Borealis** [-] consists of two simple concentric circles, placed between Boötes and the head of the Serpens held by Ophiuchus.
- **Hercules** [-] is placed with his head to the south and he faces east, away from the solstitial colure. He is naked and his lower body is in profile (with the buttocks showing) and he lifts his left leg, but the overall orientation of his body is not clear, since there are clearly visible features on his face, which is placed looking directly at the viewer. The hand of his trailing arm touches the head of Ophiuchus at the winter solstitial colure. The hand of his leading arm holds something which may be a lion's head or skin.
- **Lyra** is represented by a very peculiar H-shaped image that sits directly between Hercules and Cygnus. It consists of two vertical beams or 'horns' connected by a crossbeam.
- **Cygnus** [-] flies southwards towards Delphinus. One of its wings touches the H-shaped image of Lyra and its tail is very close to Andromeda's left hand. The Tropic of Cancer cuts through its neck.
- **Cassiopeia** [+] is placed with her feet towards the north, with her chair and her feet firmly planted on the 'outer' invisible circle, with her head towards the south. She appears to be sitting, but the contours of the throne are not clear. She also seems to be dressed, from the waist down, at least (though she may be entirely clothed). Her arms are raised to either side and she seems to be wearing a head covering or have a halo around her head. Her right shoulder is cut by the vernal equinoctial colure.
- **Perseus** [-] has Cassiopeia flanking his head, Taurus running along his southern side and Auriga at his feet. He is placed so that his body runs parallel with the circles, with his head towards the vernal equinoctial colure. He is dressed (with evidence of a short skirt-like garment) and seems to face the viewer. He holds the Medusa's head in front of him in his right hand and a straight stick in his left hand, which is raised above his head. His left foot touches the 'outer' ever-visible circle.
- **Auriga** [-] is placed directly north of the Gemini, with his kneeling knees resting on the head of the left twin. He kneels facing east, in the direction of the summer solstitial colure (in the direction of the zodiac). His arms are outstretched and he may have something in his right hand. There is no indication of Kids or the Goat, however. The 'outer' ever-visible circle cuts through his head.
- **Ophiuchus** [-] is nude and faces west, away from the winter solstitial colure, with his right shoulder and arm resting against it (opposite to the direction of the zodiac), with his back to the viewer. He stands above Sagittarius. Serpens wraps around his waist, with its head facing towards him. His shoulders and the neck of the Snake are cut by the Tropic of Cancer.
- **Aquila** [-] stands in profile with its feet planted on the Tropic of Cancer, its tail resting against the winter solstitial colure and its head towards the south. He faces away from the colure (in the direction of the zodiac).
- **Delphinus** [+] is bracketed by Aquila, the H-shaped Lyra and Pegasus. He runs parallel to the Tropic of Cancer and the equator. He swims westward, in the direction of Aquila.

- **Pegasus [-]** is ½ a only half of a horse, but his contours are very hard to read. There is a large curved shape above his back, which seem to be wings. His face and forelegs appear to be confused with the lines that define one of Cygnus's wings. His head faces towards Delphinus and his truncated belly nearly touches the head of Andromeda. His back skims the equator and is just north of Pisces.
- **Andromeda [-]** is placed to the north of Aries. She is dressed in a gown that seems to stop at her thigh and she has dark shoes. Her arms are held out to the sides, but there is no indication of ropes or chains. The Tropic of Cancer bisects her lengthways.
- **Aries [+/-]** is depicted leaping towards Pisces with his head turned back, facing over his shoulder. He has a long tail. The celestial equator skims the length of his belly and his hind-quarters are cut vertically by the vernal equinoctial colure. (The Ram is oriented in different directions in the text and in the map, but the posture is similar. Also, it does not seem that the Aries in the map has a band around his waist.)
- **Taurus [+/-]** is depicted as half a bull, with his severed belly places towards Aries. He has short horn, but the lower part of his body has disappeared on account of damage to the page. The Tropic of Cancer runs through his horns and along the length of his back. (Similar figures found in the text and the map, but oriented in different directions.)
- The **Gemini [-]** are nude, without attributes and stand facing the viewer. They hold each other's hands in such a way that they seem co-joined at the elbow. Each of their outer hands is raised. The Tropic of Cancer cuts through their waists.
- **Cancer [+/-]** has two claws and six legs, and faces (towards Leo). There are some lines trailing behind the Crab that may be indications of a tail of some sort. (similar in shape, but oriented in different directions.)
- **Leo [+/-]** leaps towards Cancer (opposite to the direction of the zodiac), with his head and tail held high. The Tropic of Cancer cuts through the length of his body from his tail to his left shoulder and paw, the northern boundary of the zodiacal band cuts across the top of his hind flank and the ecliptic itself passé s through his hind knees. (Similar, but different in the details, such as the man and the position of the tail and the inclusion or not of a tongue.)
- **Virgo [-]** wears a long gown and appears to have two outstretched wings, but no arms. She flies towards Leo (opposite to the direction of the zodiac). Her right wing touches Corvus and the hem of her skirt touches the elbow of Centaurus. The northern boundary of the zodiacal band passes through her head and along her left wing. The equator cuts through her chest and the end of her right wing, the ecliptic itself passes through her waist and the southern boundary of the zodiacal band passes through her knees, with the Tropic of Capricorn intersecting the leading edge of her hem.
- **Scorpio [-]** has two long front claws, six legs and a segmented tail. It faces towards Virgo (opposite to the direction of the zodiac). His left claw nearly touches the head of Centaurus and the tip of his tail nearly touches the bow of Sagittarius. The ecliptic passes through his left claw and along the left side of his body, while the tropic of Capricorn clips the end of his tail.
- **Sagittarius [-]** is a centaur, facing towards Scorpio (opposite to the direction of the zodiac). In is difficult to tell if he is facing towards or away from the viewer, but from the position of his trailing arm, which then curves behind his torso, it would seem that his back is towards the viewer. In which case, he holds a bow with his left hand in front of him. His front right hoof touches Corona Austrinus and his tail touches the hooves of Capricorn. His rear haunches are cut by the winter solstitial colure, the northern boundary of the zodiacal band runs through the upper part of his bow and his shoulders, the southern boundary of the zodiacal band skims the edges of his front hooves and the Tropic of Capricorn cuts through the lower part of his bow and his human waist.
- **Capricorn [+]** has two long, twisted horns and a corkscrewed body and a tail. He faces towards Sagittarius, with his front legs stretched out in front of him so that his hooves touch Sagittarius's tail. The northern boundary of the zodiacal band cuts through his horns and both the ecliptic and the Tropic of Capricorn pass through his snout and neck.

- There is an **anomalous animal** in the place of Aquarius, which looks most like a jumping dog or, perhaps, hare (compare Canis Maior and Minor and Lepus on the other side of the map). It is positioned with its belly to the north, with the northern boundary of the zodiacal band running through its forefeet. The Tropic of Capricorn cuts through its rear haunches. And the southern boundary of the zodiacal band just clips the edge of its long ears/horn (?). It might be added that this set of ears/ long horn (?) is connected to a stream that runs into the mouth of Piscis so, to that extent, it has one aspect that is faithful to the iconography of Aquarius.
- **Pisces [-]** are swimming in the opposite directions, with both their backs to the north. A line joins them at their mouths. The back of the northern fish touches the celestial equator and the fins on the belly of the southern fish clip the southern boundary of the zodiacal band.
- **Cetus [-]** is a very long sea monster with a dog's face. He appears to have short legs that have been elongated by a stream-like extension, which may have been used to indicate flippers. He has a long, uncurled tail with a trefoil end. His front flipper (?) and the bottom part of his tailfin are cut by the Tropic of Capricorn. The vernal equinoctial colure intersects his body through his tail, just below Aries.
- **Orion [-]** is nude, without attributes and strides towards Cetus (opposite to the direction of the zodiac). It is not clear if he is facing towards or away from the viewer. His lower body is in profile, with what appears to be his left leg closer to the viewer, but the fact that his facial features are included in a frontally-placed face, suggest that his upper torso is facing the viewer. The feet of the left Gemini are placed between his head and his upraised left (?) arm. His left (?) heel touches the anomalous concentric circles and there is a stream flowing from his right (?) shin. The equator cuts through his neck and the Tropic of Capricorn passes through his knees.
- **Eridanus [-]** is a 'snaky' stream without patterns. It seems to originate in the right shin of Orion, but there is also something like a snake's head a little further away from the Hunter. It trails beneath the body of Cetus. The first curve has the Tropic of Capricorn pass through it
- There is a problem with the depictions of **Lepus**, **Canis Maior [-]** and **Canis Minor [-]** in this planisphere. For a discussion of the problem, see below.
- The figure placed where **Lepus [-]** (to the south of Orion, near his following foot) does not appear to be a hare. Instead it appears to be a dog, shaped somewhat like a dachshund. It runs west, towards the legs of Orion
- **Canis Minor [-]** is drawn like a rabbit or hare, with long ears and relatively short legs. He appears directly south of the advanced Twin. He runs westwards, away from the summer solstitial colure, which just grazes his rump. The equator runs along the top of his head.
- **Canis Maior [-]** is placed behind Canis Minor and bounds towards the summer solstitial colure (opposite to the direction of the zodiac). He is certainly shaped like a dog. The equator cuts through his head and the Tropic of Capricorn passes through his left forepaw and both his hind legs.
- Included as part of this grouping, between the left foot of Orion and the head of the dachshund-shaped Lepus, there is a depiction of **two concentric circles**. For the identification of this anomalous figure, see below.
- **Navis [-]** is the rear part of a ship with three shields on deck, placed directly south of Hydra. It has two steering and five normal oars. The Tropic of Capricorn runs through the tip of the stern.
- **Hydra [+]** has its head to the south of Cancer and its tail stretches as far as the knees of Virgo. It looks like a snake with a trefol tail. The equator passes through his neck.
- **Crater [-]** is a bowl, placed on the middle of Hydra. It sits on the line of the equator.
- **Corvus [+]** stands near the tail of Hydra facing towards the Snake's head and it pecks its body. Its tail feathers are commingled with those of Virgo's right wing.
- **Centaurus [-]** appears to the south of Virgo and Scorpio, rushing towards the latter (in the direction of the zodiac). He is nude and holds a dead animal (?) in his left hand in front of him. His feet rest upon the ever-invisible circle and the Tropic of Capricorn and the southern boundary of the zodiacal band

cut through his shoulders.

- **Lupus [-]** is held by Centaurus, but the position of his body is not clear.
- **Ara** is also depicted somewhat oddly as an H-shaped object (see the description of Lyra above). It is in front of Centaurus and directly south of Scorpio's body. The image is bisected by the southern boundary of the zodiacal band.
- **Corona Austrinus [-]** consists of two concentric rings, placed in front of Sagittarius, touching the foot of his right foreleg. The southern boundary of the zodiacal band touches its northern contour and the Ever-invisible circle touches its southern contour.
- **Piscis Austrinus [-]** appears to the south of Sagittarius's hind-quarters, Capricorn and the back half of the anomalous animal. It swims in the direction of the zodiac, with his back towards the north and its mouth connected to the 'stream of Aquarius'. Its belly skims the ever-invisible circle.

Comments:

As mentioned above, there is a problem with the depictions of Lepus, Canis Maior and Canis Minor in this planisphere. Normally (and astronomically), Lepus should be placed beneath the feet of Orion and Canis Minor ('antecedens') should be behind the Hunter, above the equator, so that the summer solstitial colure grazes his rump. If one considers just the pictures in the Basel planisphere, then it is clear that the animal directly behind Orion's arm has the long ears and the short legs of a hare. The animal following this hare is certainly a dog and the animal below it, although not an attractive specimen, also appears to be a dog shaped somewhat like a dachshund. If one considers the animals in terms of their placement on the map, then the 'dachshund' is Lepus, Canis Minor is the lead 'hare-like' dog and the following dog is Canis Maior.

In the Mainz globe the relative orientation of CMi, Lep, and CMa is good, but Canis Minor is below the equator instead of above it and Canis Major is east of the colure instead of west.

In **Boulogne, Bern, Harley 647**, Canis Major is chasing Canis Minor but Canis Minor should be above the equator and Lepus should be below Orion (not to mention the positions with respect to the summer colure).

In **Vat reg 123** planispheres (Munich 210 seems to be part of this family, though Lepus is missing). relative orientation of CMi, Lep, and CMa is OK

'in the rest of the planispheres, however, Canis Minor is depicted following Canis Maior (see, for example, Aberystwyth, Berlin 129, Burgo de Osma, Vat grec 1291, Vat grec 1087.'

Finally, on all antique globes, the Farnese, Kugel and Mainz globe one can see Canis Minor. On both the Farnese and Kugel globe it has the correct position above the equator and just west of the colure.

It would seem that, in this case, the placement should be considered more important than the actual form of these animals when it comes to identifying which constellations they are supposed to be. It is worth noting that there is almost no iconographic overlap between the constellations depicted within the Germanicus text and those that appear in the planisphere. Again, this points to the likelihood that these images were derived from separate traditions.

Included as part of the grouping of constellations around Orion, there is a depiction of **two concentric circles**. For the identification of this anomalous figure, see below which are extremely similar to depictions of coronae elsewhere in the map (see the Corona Borealis above the head of

Bootes and the Corona Austrinus beneath the feet of Sagittarius). In comparing this image with other planispheres, there is nothing quite like it (if one discounts the possibility that this may be a wildly misplaced remembrance of the halo of Canis Maior or the urn held in some representations of Eridanus). Interestingly, though, there is a nearly identical set of circles beneath the depiction of Lepus in the Paris Kugel globe and there is a circllet of 8 stars in this location on the Mainz globe. Surely, this image is intended to represent the Aratean description of the unnamed stars set below the flank of the Hare, which, in the catalogues of the globes, are referred to as Anonymous Star Group I.

The radii of the various circles indicate that a linear scale underlies in the construction of the map. Assuming the distance of the Equator equivalent to 90° , one finds that the angular distances of the Tropics of Cancer and Capricorn correspond to 67° and 113° from the centre of the map, respectively. These distances would be equivalent to a value for the obliquity of the ecliptic of 23° . The ecliptic pole appears to be located at an angular distance of 24° from the centre of the map, roughly as expected. Using the same linear scale factor as used for the tropics, the radii of the boundary circles centred on the ecliptic pole correspond to angular distances of about 79° and 100° , respectively. This indicates a size of the ecliptic of 90° (mean value of the sizes of the upper and lower boundaries) and a width the zodiacal band of 10° to 11° . With the same linear scale, one finds that the angular distances of the mean values of the ever-visible and the ever-invisible circle from the centre of the map correspond to 40° and 136° , respectively. These distances would be equivalent to the geographical latitude of about 40° to 44° .

From the location of the colures, one can conclude that at least some of the zodiacal constellations are in a curious position. The vernal equinoctial colure should pass through the head of Aries and the autumnal equinoctial colure should run between Virgo and the Claws of Scorpio (*i.e.*: Libra). The winter solstitial colure should pass between Sagittarius and Capricorn. Another deviation is that the bears are not placed on alternate sides of the northern celestial pole. Instead, this pole is placed in the body of Ursa Minor.

ff. 14r-39v Brown pen drawings of the constellations with stars marked by pale red crosses throughout. Some of these crosses are larger, perhaps indicating brighter stars. The followings are placed within line-drawn frames: *Draco inter arctos*, Ophiuchus, Corona borealis, Gemini with Cancer, Leo, Taurus Triangulum, Pisces, Lyra, Delphinus, Sagittarius, Aquila, Canis Maior, Lepus, Navis, Eridanus and the Hydra, Crater and Corvus grouping.

fol. 14r **DRACO INTER ARCTOS** with both bears set within the curves of Draco, all three of which are contained within a single-line frame. **DRACO** forms nearly a figure '8' with its body and has a red comb, beard and tongue. It is marked by 3 stars in the head and 10 in the body. Neither of the bears is differentiated in terms of size; both have no tails, humps on their backs and their mouths are open; the bear set within the first curl of the dragon (on the right side) lunges to the right into the body of Draco. One would expect **URSA MINOR** in this place, but this bear is marked with 25 red crosses and three red dots above her nose. The other bear is contained

within the left curl of the snake and faces toward the left and the tail of Draco. Here, one would expect **URSA MAIOR**, but this bear is marked by 7 red crosses.

- fol. 14v **HERCULES** appears to be nude, though his physiognomy is a bit odd. He faces the viewer and kneels to the left on his right knee. He appears to have a cap or halo, with short hair and a beard. He holds the lion skin extended in front of him over the length of his right arm and holds a club with leaf-like extrusions above his head in his left hand. He faces a large snake, climbing a tree. Hercules is marked by 14 crosses, one of which is a very large one on his head and three stars are in the lion's skin.
- fol. 15r **CORONA BOREALIS** is a circlet composed of 9 stars, contained within a single-line square frame
- fol. 16r **OPHIUCHUS** is nude and faces away from the viewer towards the left. He has a halo encircling his head and curly hair and a beard. He holds the serpent so that its neck is held in his left hand. It faces towards him, its body runs behind his in a straight line and a curl of its body obscured the bearer's right hand. Ophiuchus is marked by 14 crosses and the Serpent is marked by 29 stars. Ophiuchus has 1 in head, 1 each shoulder, 1 each elbow, 3 left hand, 2 right hand, 1 each knee, 1 each foot or 14 in all; Serpens has 7 in head, 2 in neck, 6 and 14 in the body or 29 in all The Snakeholder stands on the back of Scorpio, which has two large claws held in a semi-circle and only 4 feet on his lower edge. His tail is not segmented and he faces towards the left. Scorpio is marked by 19 stars.
- fol. 16v **BOOTES** appears to be facing the viewer, though the orientation of his right (?) hand suggests that this may, indeed, be his left hand. He is dressed in a short *exomis*, which is caught by a pin at one shoulder. He has short hair and wears a quiver slung across his body. He holds a curved staff upraised in his right (?) hand and holds his left (?) out to one side. He is marked by 16 stars.
- fol. 18v **VIRGO** faces the viewer and is dressed in a long skirt that opens to show her right thigh. The short covering garment on top is hung so that her right breast is exposed. She is winged and holds three sprigs of wheat in her right hand and a caduceus in the crook of her right elbow. She is marked by 19 red crosses, of which 6 are at the hem of the shorter garment.
- fol. 20r The **GEMINI** are nude, save for long cloaks/*chlamys*. They are positioned in such a way that the left Twin appears to be walking towards the right one, who greets him by placing his right arm around the left Twin's shoulder; the left Twin places his arm on the right Twin's waist. The left Twin holds a curved stick behind him near

his buttocks and the right twin holds a harp. The left Twin is marked by 10 red crosses and the right one by 8 red crosses. **Cancer** is placed to the right of the right twin's feet, facing them. He has two large claws, a circular body, two large eyes on top of his shell and 8 legs. He is marked by 13 crosses and by 5 extra dots on his upper flank.

- fol. 21r **LEO** leaps to the left, with his tongue out. His body is marked by 17 crosses and there are an extra 7 crosses outside of it, above the hind part which represent the Coma Berenices.
- fol. 22r **AURIGA** is dressed as an antique warrior with a crested helmet, standing in a battle chariot, drawn by one horse (the accompanying annotation in red reads: 'iv equi debent essere'). The reins running between the Charioteer's left hand and the bridle of the horse are in red. He is dressed in a long cloak, which exposes his torso and right shoulder and arm. He holds a bowl (?) in his right hand. He is marked by 8 red crosses. Behind him, there are three goats with long, way horns, each of which with a red cross set within the tufts of their forelocks.
- fol. 23v **TAURUS** is shown as half a bull, facing to the left with his left leg tucked under his body and his right leg extended in front of him. He is marked by 15 crosses of which 3 are set in his face (one of which sits squarely on his nose) and 2 on his horns.
- fol. 24r **CEPHEUS** stands frontally and holds his hands out to his sides. He wears oriental garb - a close-fitting top, with a long skirt and boots or leggings on his feet. He has a quiver slung over his right shoulder, which rests at his left hip. He also has an odd turban, which has a large jewel set into it, or crescent-shaped headdress. He is marked by 17 red crosses, plus a red smudge or dot by his right foot.
- fol. 24v **CASSIOPEIA** sits on a tall-backed throne, on a cushion. Her feet are supported by a square footstool. She has long tresses, not covered by a headdress and holds her hands out to her sides. Her long robe is modest, but exposes the length of her arms. It is marked by wide bands at the neck and waist and an interconnecting piece between the two, which are decorated with 4 large buttons. She is marked by 11 red crosses, of which 2 are in the top corners of the throne.
- fol. 25r **ANDROMEDA** is shown standing frontally, chained at her wrists to high piles of rocks set on either side of her. She wears a long dress that appears to have a neckline (and no breasts are shown). There is also an extra piece of fabric wrapped around her waist. She is marked by 20 red crosses.

- fol. 26r: **PEGASUS** is depicted as half a winged horse flying to the right. Both of his forefeet are set forward in front of him. He is marked by 16 red crosses.
- fol. 26v **ARIES** is shown leaping to the right, with his head turned backwards towards the left. He has curled horns, a long tail and wears a band around his middle. He is marked by 13 red stars and his band has a red stripe running along it.
- fol. 27r **TRIANGULUM** is a thin isosceles triangle, sitting with its sharpest angle pointing to the top. It is decorated with a leafy motif and set within a double frame. It is marked by 3 red crosses.
- fol. 27v **PISCES** are set within a single-line frame. They are placed with their tails nearly touching at the bottom of the picture and their mouths towards the top corners, and are back-to-back, with their bodies forming about a 60° angle. They have stripes on their bodies and are joined at the mouths by a long, sinuous cord. The cord is marked by 9 crosses, the left fish by 12 and the right fish by 15.
- fol. 28r **PERSEUS** strides to the left with his rear facing the viewer. He wears a Phrygian cap on his head and what Escher describes as a ‘falsely drawn *chlamys*’ over his left forearm. He holds a curly-haired Medusa in his left hand and a *harpe* behind him in his right hand. His feet are winged and he is marked by 11 crosses: 1 in right shoulder, 2 in back, 2 in left hand, 2 in right hand, 3 in left leg and 1 on left foot. There are also 2 on the Medusa head. [check]
- fol. 28v The reversed figure of Perseus has been traced on the verso of the folio in light brown ink.
- fol. 29r **LYRA** is set within a single-line rectangular frame. It consists of two long, striped oxen-horn connected at the top by a straight bar, from which 5 strings are strung. It is not marked by stars.
- fol. 29v **CYGNUS** is depicted as a full-breasted goose standing towards the left with its wings extended behind it. Its long neck is stretched forward in a series of elegant curves. It is marked by 13 red crosses, of which one in the head, one in the body, one in the tail and five in each wing.
- fol. 31v **AQUARIUS** faces the viewer and walks slightly to the right. He is dressed as Ganymede with long hose, a *chlamys* and a Phrygian cap. His upper torso is bare. He holds his upturned urn in both hands so that his right arm crosses his body. He is marked by 10 stars.

- CAPRICORN** faces towards the left, with long, wavy horns and a healthy mane. His body is encircled by three bands and his tail ends with a circle and a point. His feet are stretched out in front of him and he has 23 stars composed of crosses and dots.
- fol. 32v **SAGITTARIUS** is set within a single-line rectangular frame. He leaps to the right, with an animal skin draped over his left shoulder and streaming off to the left (with one foot and a tail visible). He holds the bow with his left hand and pulls the arrow taut with his right hand. He is marked by 9 crosses: 2 in head, 1 in bow, 1 in arrow, 1 on each knee, 2 on back and 1 on tail.
- fol. 33r **AQUILA** is set within single-line square frame. He stands towards the right, but looks over his shoulder to the left. His wings are outstretched and he stands on **Sagitta**. There are 4 red crosses in the Arrow and 4 in the Eagle.
- fol. 33v **DELPHINUS** is set within a single-line rectangular frame. He faces to the left and is extrapolated from the classical of a dolphin, but his snout seems to have developed so that it looks like a second fish with an open mouth has been placed beneath the Dolphin's chin. It has a crescent-shaped tail and is marked by 8 red crosses.
- fol. 34r **ORION** stands frontally and is dressed in a short *exomis* and the net of his sandals is clearly shown on his calves. He has short hair and wears a scabbard/sword slung from his right shoulder. He holds a curved stick in his upraised right hand and this left arm and hand is covered by the cloth of his top (there is no line of demarcation between clothing and 'cloth/skin' that covers his arm). He is marked by 14 red crosses, of which 3 are in the head and 3 are in the belt.
- fol. 35r **CANIS** is set within a double-lined square frame. He stands to the left, his mouth is open and his tail, which extends beyond the frame, is raised. He wears a red collar and his head is encircled by a halo from which a series of red rays are emitted. He is marked by 16 red crosses, of which 4 are in his tail.
- fol. 35v **LEPUS** is set within a single-line rectangular frame. He leaps to the left and is marked by 7 red crosses.
- fol. 36r **NAVIS** is set within a single-line rectangular frame. It appears to be depicted as $\frac{1}{2}$ of a ship, with one or two great steering oars set within oarlocks at the back and 15 other, smaller oars (?) along the side. The sail is raised and the single mast has a streamer shaped like a serpent. The large 'eye' set on the stern is coloured red and the ship is not marked with stars.

- fol. 36v **CETUS** faces towards the left and is a somewhat clumsy adaptation of the classical sea-monster, with claws for forefeet and a body divided into 3 segments. It has a dog's face, with large whiskers at his jowls. He is marked by 13 stars, of which 5 are in the end of the tail and 6 are below his belly.
- fol. 32r **ERIDANUS** is set within a single-line square frame and is represented as a bust of a river god. He seems to have an *exomis* over his left shoulder and his right shoulder and breast are bare. Two concentric circles representing the foreshortened mouth of an urn appear below his left shoulder. He has long hair, a beard and odd wavy lines coming from his head. There are no stars marked.
- fol. 37v **PISCIS** is shown upside-down as if lying on his back and is covered with semi-circular scales. His mouth is open and his backbone is marked by 12 red crosses.
- fol. 38r **ARA** is a two-story structure with a series of graded steps at the bottom and between the two stories. It is marked by 4 red crosses.
- fol. 38v **CENTAURUS** walks to the right with his right foreleg raised. He wears a puffy hat, is bearded and has an animal's skin (with tendrils and paw visible) flowing from his shoulder. In his outstretched left hand, he holds an animal with its feet sticking upwards. Over his left shoulder, he rests a stick to which a snaky banner is attached. He is marked by 25 red crosses and the **BESTIA** is marked by 10 red crosses.
- fol. 39r **HYDRA**, **CRATER** and **CORVUS** are set within a single-line rectangular frame. Hydra is depicted as a snake and slither to the left with his head raised at a right angle to his body. Crater is a vase with two handles and Corvus faces towards the front of the snake and is pecking at his body. There are 26 crosses in the body of Hydra, 7 in Crater and at least 5 in Corvus (the certain ones are: 1 on beak 1 on wing, 1 on tail, 1 below Hydra).
- fol. 39v **CANIS MINOR** runs to the left with his mouth open. He wears a collar that has been coloured in red and has a long tail. He is marked by 3 red crosses.

notes

quarto (23 x 14.6 cm); HAFFNER says 221 x 141 mm.

bibliography

EYSSENHARDT 1866, pp. lxii-lxiii.

BREYSIG 1867, pp. xii-xv.

BAEHRENS 1879-83, p. 143.
dates to 10th century.

MAASS 1893 (1955) and planisphere appears as an unnumbered plate at the end of the volume

BETHE 1893, pp. 94-95.

MANITIUS 1897, pp. 305ff.

THIELE 1898, pp. 23, 26 and 143 ff.

von WINTERFELD 1900, pp. 393-95.

BOLL 1903, pp. 102 ff. and fig xv (Engonasin).

ZIMMERMANN 1910.

ESCHER 1917, pp. 32-34.

quarto (23 x 14.6 cm), 45 ff.

10th century, probably written in Fulda, in mixed uncial and capital; pictures are all coloured in brown pen with each of the stars marked with pale red crosses; on fol. 45v, there is an inscription from the 14th century to Fulda Library., fol. 11v 'anno quinto [sic] decimo imperii' = Kaiser Otto I or Otto II; fol. 1v: full page view of the heavens; ff. 14-39v: pictures of constellations (of which he provides a good description); notes the absence of the Milky Way and the Pleiades

LEHMANN 1928, pp. 12 and 217

CHRIST 1933, pp. 40, 166, 210-11 and 291.

WEITZMANN 1947 (1970), pp. 85-86.

Or one solves the problem of column reduction by placing two or more items side-by-side, such as **Basle AN.IV 18**, which belongs to the 10th century and was perhaps written and illuminated in Fulda (cites Escher), and notes how Aquarius and Capricorn share the same pictorial space

BYVANCK 1949, n. 41, pp. 216-16, 322 and 324.

obvious derivation from antique manuscripts; notes globe illustrations; with 36 pen drawings and planisphaerium, Fulda, 9th century

STERN 1953, pp. 36-37, 191 and 199ff.

MARTIN 1956, pp. 38 -49.

9th century; following a collection **with?** bits from the *Aratus latinus*, provides Germanicus with a *scholia* in the same order as Paris BN lat 7886 (9th century, not illustrated); with 36 constellations illustrated; has a planisphere; **Madrid** and **Basle** really represent the two most successful types of manuscripts in the Middle Ages (acc. to Thiele, p. 145); also cites **muse in Vienna 2352**

p. 42: Basle as one of the exemplars: contains only the introduction with texts VI and VII²; it removes the parts that seem too badly corrupted or too clearly Aratean, but without trying to re-order the text; the Germanicus and the *scholia* illustrate the substitutions to advantage

p. 49: wants to know why the msB which seems to be a demonstrable fusion between the Germanicus and *Aratus latinus* does not have a picture of the Asses and the Manger, which is common to all *Aratus latinus* mss; doesn't appear in Basle AN IV II because the *Aratus latinus* part of the text here is intelligible, so the author uses Germanicus and the Asses and Manger drop out.

GUNDEL and **BÖKER** 1972, no. 225, p. 682.

MCGURK 1973, pp. 197-200, ii.

says that planisphere immediately precedes Germanicus's translation of Aratus.

Le BOEUFFLE 1975, pp. xxxvi-xxxvii.

45 pp in quarto in Carolingian minuscule on parchment; ff 10v-43 has verses 1-582 (with missing lines 224, 248-250, 400, 402 and 513 and fragments 3-4, which are common to branch O) with fragment IV; 36 drawings of constellations an ancient *scholia*; 9th century; according to ORELLI was written at Fulda; contains traces of ancient orthography therefore must be modelled on an original of the 6th century, written in uncials without separation between words.

STEVENS (Hrabanus Maurus)1979.

REEVE 1980, p. 516.

illustrations resemble Madrid 19 and are located in same places re: text; from Fulda 9th century

STEVENS 1979, I, pp. 27-63.

LOTT 1981, II, pp. 147-58.

McGURK 1981, p. 319.

every sign of antiquity; early 9th century, Fulda.

MUNK OLSEN 1982, I, p. 405.

Le BOURDELLÈS 1985, pp. 28 and 57.

Latin translation of part of the Aratean corpus; serves as the commentary to an edition of the Germanicus poem, placed in tranches following each constellation with mythological fable and positions of stars.

BISCHOFF 1989, p.90.

MUTHERICH 1898, pp. 37-42, 44-50, 52 and 61ff.

ERNST, 1991, p. 585.

GUGEL 1995, p. 30.

HAFFNER 1997, *passim*, esp. 81-90. 121-24..

text related to Madrid 19; has *scholia* incorporated in the Germanicus text; says that the location of the map is not certain (repr. figure 5) pp. 81-90: Germanicus with a fragment of *Aratus latinus*; 34 illustrations of the constellations some of which are given frames and are set between text and *scholia*; most are same width as the column of text; also a much larger single sheet with a planisphere on it;

the drawings are by 3 hands: fols. 4r-16r (Bears to Ophiuchus), where the artist uses thin/weak brush, in several short, scratchy strokes in a dark ink and it is noteworthy how

does a distinct different renderings of the eyes in profile with a small 'lancet' marking the brow another stroke for the upper lid and the pupil formed by a dot, etc. The second artist does most of the ms drawings, those on fols. 18v-21r and fols. 27v-39v; uses a wider brush than the other artist and puts pupil in the corner, dispenses with eyebrows and tear ducts and gives a heavy round chin, etc. The third artist does fol. 16v (Bootes) and fols. 22r-27r (Auriga to Triangulum); and he uses a bright brown ink with a large pen so that the strokes are bold; large feet and hands with pointed fingers; folds of robes as double lines. A big difference between the Basle ms and the antique Germanicus illustrations is the sacrifice of the colour. Divergences from the 'model' include:

Hercules has a nimbus, club and plant

Ophiuchus also has a nimbus

the Twins are naked

Auriga has a chariot and a horse and sandals and a pallium and has a goat and two kids behind him

Navis has a great sail

Eridanus is as a half figure

Ara is in block form

Centaurus wears a peculiar cap

Some of these are formal misunderstandings—such as misunderstanding the hairstyle for a nimbus or the club of Hercules with a star as a flower, or the overhanging mantle of Orion as and unformed arm, or misunderstanding the pleats in the clothing of Cepheus's shoulder covering, or his Phrygian cap turning into a turban, Eridanus as coming from the water = half-god,; some mistakes are due to arbitrary accentuation of the details, (shoulder or genital hair?); others stem from mistakes by the copyist, such as Auriga's hoarse drawn so large, that there is only room for one, and the largeness of Eridanus,; also some changes that are not mistakes, but 'changes in direction', such as the Fish and Ara (which follow a Merovingian decorative example [??]).

Haffner characterises the types of mistakes each artists makes; artist 1 misunderstands hair for a nimbus; artist 2 is not free from error, but is better and artist 3 is fascinated by details and makes basic errors as a result.

Codicologically, the manuscript shows the influence of Anglo-Saxon practices before the middle of the 9th century. The earliest explicit reference about provenance is in the Fulda Abbey in the first decade of the 13th century. However, the Fulda style is clear (cites MUTTERLICH 1980); analyses style re: other manuscripts and note that at this time, Fulda was the center of the French power and notes that Hrabanus Maurus was in the cloister school in 817, and in 822 was Abbot; allegiance to the court and esp. King Ludwig dem frommen (Louis the Pious) and the influence of Alcuin; talks about Hrabanus's star catalogue (which is said to be originate from the *De signis caeli*, "presumably but STEVENS) and thinks

he is closely involved as he is documented as writing computus from 814-16. STEVENS has a record of his knowledge of 'Aratus', and notes the cluster of works during this period: **Leiden Aratea** = 816; **Madrid 3307** as the encyclopedia of 809, and the *Aratea* of Cicero (**Harley 647**); (p. 90)

somehow Haffner concludes that the drawings in the Basle manuscript were copied after the same model that served for those in the Leiden *Aratea* [?]; she dates the drawings in the Basle ms as 820-30 from the Fulda scriptorium, its contents have influence of the work of Hrabanus Maurus and the his *scholia* from his book on the computus. This book gives very concrete information as to the text and the images. It was used as an entry-level text for necessary astronomical grounding for computus-reckoning [?]; Hrabanus realized an image-program initiated by Charles the Great and Alcuin. This model probably came from the court.

pp. 121-124: 45 ff in strong vellum (perhaps calf, but not the best quality); was the first brought together in the coll. of *scholia* by EYSENHARDT (1866) pp. LXII-LXIII and BREYSIG (1867) XIII-XV; see also THIELE (1898, p. 143ff) and WINTERFELD (1900, pp. 393 ff) and ESCHER, 1917, pp. 32-34; codex format, 22.1 x 14.2, but pages vary slightly in size; codex by various hands and these seem to change mid-quire, with different tints of ink in both Carolingian and Anglo-Saxon miniscule; these kinds of writings means it is continental, done at Fulda, at the beginning of the 9th century; the 34 ink drawings were done by three hands. On fol. 22r there is a change of writer and also of illuminator which seem to suggest that the two are identical; talks about the date on fol. 11v; and the second date to the 13th c on fol. 45v;

STEVENS 1997, fig. 10.

BISCHOFF 1998, no. 258.

OBRIST 2001, p. 25.

LIPPINCOTT 2006, pp. 7 ff.

BLUME 2009, p. 242-43.

AVILÉS, *El Tiempo y los Astros*, fig. 21

DEKKER 2010, pp. 4, 8-9, 30-31

Oldest surviving codex with Latin *scholia*; from Fulda 820-35; HAFFNER 1997, pp. 81-90, 118 and 121-24) says that oldest member of v-branch of O family and is based on same

exemplar as the one used for the Leiden *Aratea*; positions of cross-shaped stars matches the text of the *scholia*

notes that the Basel Hercules is not at all close to the Leiden *Aratea*; and also notes that the following are not either: Bears and Draco, Auriga, Cepheus, Pisces, Cetus, Orion, Eridanus and Ara; this calls into question HAFFNER's claim that two mss are based on the same exemplar; instead suggests that there was more than one antique exemplar involved in the transmission of the Germanicus *Aratea*. See BISCHOFF 1989, p 89 for this suggestion. Must have been an extensive corpus of illustrations

BLUME, HAFFNER, METZGER 2012, pp. 73-74 and 202-07.

pp. 73-74: main source is probably an antique codex; first to attach the 'mythological' information to the Germanicus text in the *scholia Basileensia*; based on creative output of Hrabanus Maurus at Fulda; important spiritual centre with major educational facilities; here were derived from an ancient model; images are simple and (sometimes) clumsy; since focused on the educational benefits, the *scholia* is more important than the poetic verses; the positions of the red crosses mark star described in the text (and not visual observation); mentions Hrabanus Maurus's description of Aratus as a useful tool for timekeeping (and dismisses figures as detracting from the truth - hence simple illustrations in this text (??);

pp. 202-07: text partially in Carolingian script, and parts in Anglo-Saxon miniscule; second oldest Germanicus manuscript; Basel-Madrid textual family; textual relation with ABERYSTWYTH 735c; likely also ended with Milky Way and Planets (as with MADRID); stylistic connection to other Fulda manuscripts; connections with Hrabanus Maurus

DEKKER 2012, pp. 142-45; 171-73 and 228-30.

pp. 142-45: connected to the v-family of the O-branch

pp. 171-73: Libra as Claws on Scorpio indicate an older tradition

pp. 228-30: notes considerable losses from folding on one side of the map about 4 cm wide ; only one to have appearance of constellation grouping 'Anonymous I'

consulted February 2004